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# ***JPRS Report***

## **Soviet Union**

### ***Economic Affairs***

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# Soviet Union Economic Affairs

JPRS-UEA-88-004

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## ECONOMIC POLICY, ORGANIZATION, MANAGEMENT

### Figures Cited on Gospriyemka Product Rejection Rates

18200039 Moscow *EKONOMICHESKAYA GAZETA* in Russian No 51, Dec 87 p 16

[Article under the rubric "According to Data of the USSR State Committee on Statistics" titled "Calling Bad Workmen By Name"]

[Text] In October of this year, State Acceptance [Gospriyemka] did not accept 37 million rubles worth of production, or 0.3 percent of the production volume which was submitted for acceptance (in September, 53 million rubles worth of production, or 0.5 percent, was not accepted).

The share of production which State Acceptance declined was significantly higher than average for enterprises and associations of the USSR Ministry of the Machine Tool and Tool Building Industry; the USSR Ministry of Instrument Making, Automation Equipment and Control Systems; the USSR Ministry of Light Industry; and the USSR Ministry of the Construction Industry. Among the enterprises for which a significant portion of the production submitted was not accepted by State Acceptance organs are the following: the Moscow "Elektrosvet" plant imeni Yablochkov of the USSR Ministry of the Electrical Equipment Industry; the Odessa Machine Building Production Association of the USSR Ministry of the Machine Tool and Tool Building Industry; the Rostov-on-Don GPZ-10 [State Ball-Bearing Plant No 10] of the USSR Ministry of the Automotive Industry; the Batumi "Bytmash" plant of the USSR Ministry of Machine Building for Light and Food Industry; and the Kupavna Fine Cloth Factory imeni Akimov of the USSR Ministry of the Automotive Industry; more than 10 thousand small capacity electric motors for automation and mechanization (1.7 percent) of the USSR Ministry of the Electrical Equipment Industry; 2.2 thousand washing machines (6.1 percent) of the USSR Ministry of Heavy and Power Machine Building; 3.3 thousand television sets (2.6 percent) of the USSR Ministry of the Radio Industry; 14 thousand quartz electronic watches (4.9 percent) of the USSR Ministry of Instrument Making, Automation Equipment and Control Systems; 278 thousand linear meters of cotton cloth (0.6 percent) and 105 thousand pairs of shoes (2.1 percent) of the USSR Ministry of Light Industry.

From January to October, the sum of 45 million rubles of production was definitively rejected.

### Survey Notes Worker Pessimism on Restructuring Progress

18200031 Moscow *AGITATOR* in Russian No 20, Oct 87 (signed to press 30 Sep 87) pp 10-12

[Article by M. Petrov under "Observations of a Sociologist" rubric: "Activity of the Labor Collective"]

[Text] Today it is impossible to make fuller use of the creative potential of the individual without establishing harmonious and cohesive labor collectives. It is precisely here where the concepts of politics and economics are translated into the language of practice.

The social and economic processes in labor collectives were extensively examined in the book by V.N. Ivanov "Trudovoy kollektiv—pervichnaya yacheyka sotsialisticheskogo samoupravleniya" [The Labor Collective—the Primary Unit of Socialist Self-Administration], Moscow, "Mysl," 1987. On the basis of the analysis of the results of a number of sociological studies carried out at many enterprises and kolkhozes in recent years, it reveals the main functions of labor collectives: economic, production, social and political-ideological; ways and methods of activating the human factor and tremendous reserves for its utilization, and the involvement of working people in the processes of managing production, and, in the final analysis, all affairs of society.

Their creative activity in fulfilling the decisions of the 27th CPSU Congress and in implementing perestroika in the economy is growing. In confirming this, the book presents the results of a sociological study carried out in 1986 by the Academy of Social Sciences. It covered more than 4,000 workers and kolkhoz farmers in 29 enterprises and about 1,000 party, soviet, trade-union and economic workers in 10 regions of the country and analyzed the documents of party committees, statements of local newspapers, etc.

The efforts aimed at renewing Soviet society produced a positive reaction among a significant part of the working people. Nine of ten of those surveyed expressed the certainty that their collectives have a real possibility of raising the quality of labor and produced output and that they could work with greater efficiency if the economic working conditions and the organization of production are improved. More than two-thirds of those surveyed express the desire to raise their practical skills and 60 percent would like to widen their knowledge of production economy.

At the same time, serious shortcomings in the organization of production and labor are preventing people from being actively involved in the processes of perestroika. Only 37 percent of those questioned stated that they are fully realizing their capabilities, 82 percent note the existence of cases of mismanagement in their workplaces, and three-fourths noted a hardening of the forms of socialistic competition.

Many do not yet have a clear notion of the economic base of management and of the connection between labor and economic incentives. Seventy three percent of workers and kolkhoz farmers doubt that an improvement in their work will bring with it an increase in their wages. Only 43 percent of rural working people and 26 percent of urban workers are of the opinion that successes and shortcomings in the work of enterprises are

reflected in an increase in their well-being or in the social and cultural development of the collectives. Only 20 percent noted real movement in the direction of improving the remuneration of labor.

The surveys indicate that the process of perestroika is complicated and that not much is being done to introduce its profound reserves—the action and initiative of the masses and their principles of self-administration. Along with the high willingness of people to change the existing situation and to fight against negative phenomena, the study also showed that the working people are not adequately involved in the realization of these intentions and that their personal contribution to specific measures being carried out in labor collectives is limited. Forty eight percent of those questioned indicated that they made suggestions for rationalization, 27 percent said that they try to raise the efficiency of the utilization of equipment, 32 percent attempt to improve the organization of socialist competition, and 50 percent try to strengthen labor discipline.

People are putting higher demands on the work of party and economic managers in the collectives. Only one-fourth of those surveyed stated that there were positive changes in the work of party and trade-union organizations and administration. People are increasingly judging the effectiveness of the management of collectives not by the number of decisions made and meetings held but by practical work. Meanwhile, for example, 89 percent noted that questions in raising the productivity and quality of labor are discussed at their enterprises but only one-fifth of those asked see a specific yield from this. Only 15 percent think that the talk corresponds to the action in the work of party and trade-union organizations. The rest are skeptical to one degree or another, whereby one-fourth of the workers note cases where there is a disparity between words and deeds in administration.

Where are static phenomena seen more specifically in the style of the work of party and economic managers in labor collectives? Above all, it is the continuing discontinuity in ensuring the unity of economic, organizational and ideological measures. Analysis of party documents reveals that most of them deal only with production matters and that the measures outlined in them are not aimed at utilizing the creative potential of the individual. They poorly reflect new problems raised by life—the development of democracy, the participation of the working people in management, and the expansion of glasnost. Sixty percent of decrees and plans are intended for work without taking into account specific categories of people. Analysis of the materials of oblast, city, rayon and large-circulation newspapers shows that only one-tenth of the statements on economic questions deal with the role of the human factor in the intensification of production.

Surveys also confirm that party and economic managers have not yet learned to operate under conditions of democracy, react poorly to comments made, and frequently do

not help in their realization and in involving working people in management. Fifty one percent of workers and kolkhoz farmers noted that in the course of the year they made specific proposals for the improvement of the work of collectives. But only 44 percent of kolkhoz farmers and 6 percent of urban workers think that their proposals were fully realized and 31 percent of all those questioned think that they were realized in part. Only 24 percent are counting on careful attention being paid to their opinion.

A substantial turning to the tasks of intensification in the thinking and behavior of managers of labor collectives was noted by 28 percent of those surveyed in this category. In the assessment of the problems in economic management, 71 percent put the poor utilization of economic methods for the management of collectives in first place and 68 percent indicated the inadequate economic competence of captains of industry.

Among the factors negatively influencing the resolution of production tasks, 79 percent of managers noted the limitation of the operational independence of enterprises. They named excessive paperwork, over-organization and the large share of routine elements in the organization of managerial labor as the basic conditions hindering the realization of their capabilities. As before, leading personnel do not see ways for realizing the potential of the human factor as being among the most important conditions for the intensification of production, paying most of their attention only to the strengthening of discipline. Only 10 percent of managers noted the necessity of improving relations within collectives, 16 percent thought it was necessary to involve working people in management, 23 percent noted the need to raise economic competence, and 32 percent believed it was necessary to improve ideological conviction. But more than half of managers were unable to give any response at all to the question: "What forms of the participation of working people in the management of the affairs of the collective do you consider effective?"

All of this allows one to assert that the preparation of party and economic managers for the resolution of new tasks, including the more active involvement of the working people in the management of the affairs of their own collectives and the further development of the principles of self-administration, is clearly inadequate. Obsolete stereotypes and the volitional and formalistic style of management that arose in previous years are still strong.

The restructuring of all areas of the life of society relies on the maximum utilization of the democratic nature of socialism, the essence of which is the mass involvement of working people in the management of state and public affairs. The June (1987) CPSU Central Committee Plenum noted that the primary meaning of the fundamental restructuring of party work is in its turning to people and to vital matters.

A labor collective is a complex social and economic organism. The management of production, the implementation of technical reconstruction, the resolution of social problems, concern about the health of people, their living and working conditions and education, and much more presuppose the active participation of each worker in the affairs of the collective. In insisting on the independence of enterprises, V.I. Lenin never reduced it merely to a purely managerial and economic problem. He believed that "every factory, every artel...in the sense of the democratic bases of Soviet authority is an independent commune with an internal organization of labor" (*Polnoye sobraniye sochineniy [Complete Collection of Works]*, Vol 36, pp 147-148).

The enterprise is the material basis of the technical and economic creativity of the masses. Labor is the main sphere for the self-affirmation of the individual. All incentives converge in labor, for all forms of activity are materialized in it: material, spiritual and social-political. A most important task is to achieve the organic combination of all of these incentives in each collective.

"What final goals and vital motives are you guided by in participating in socially useful labor?" they asked the workers of the Tiraspol Sewing Production Association imeni 40-letiye Komsomol. Of those surveyed, 71.4 percent answered that they are laboring on behalf of a strengthening of the socialist system, linking the achievement of these lofty goals with the well-being and happiness of their own lives and with the establishment of guaranteed bases for the happy future of their children. A study in a number of labor collectives in Moscow (primarily in small collectives, with up to 100 people) revealed that 46.5 percent of those surveyed desire to contribute to the good work of their own enterprise as a reason to participate in the management of production, 32 percent strive to fight against shortcomings, and 21.3 percent have a need to consider themselves the masters of the enterprise. At the same time, only 6.1 percent indicated a willingness to raise their own authority in the collective and 8.6 percent indicated their desire to attain personal success.

In the course of the survey, the workers were also asked what characteristics they have as masters of production. Seventy one percent of those surveyed responded that here one should include the striving to work conscientiously; 52.4 percent indicated conscientious labor discipline; 31.2 percent pointed out the habit of not ignoring shortcomings; 20.5 percent cited the striving to raise their own qualifications; and 43.5 percent indicated persistent interest in improving the production process and the moral and psychological climate.

The surveys showed that extreme regulation of the administrative work of the collective paralyzes its activity and puts most of the workers in a position of being merely executors of the directives of higher levels. The inadequate participation of the members of the collective in the resolution of fundamental production and

social problems leads to the fact that people consider many solutions to be less than optimum and inwardly are not in agreement with them.

Thus, according to the data of studies carried out in a number of regions of the country, only 18.9 percent of all those surveyed are firmly convinced that all or almost all questions in production life in their labor collectives are resolved fairly, 51 percent think that some are and some are not, and 16.2 percent are convinced that there is no such fairness in decisions. Overall for the regions surveyed, 35.6 percent of those questioned were able to say that the discussion of particular questions in meetings of their collectives is, as a rule, businesslike and constructive in nature. At the same time, almost as many pointed out that only at times is it businesslike, frequently it being merely something to be "checked off," and 19 percent noted that the discussion of production matters or other questions at meetings is often still formal in nature.

About one-third have a pessimistic assessment of the interest and willingness of state authorities and officials to consider the practical comments and suggestions of citizens in their own work. More than one-third of all those surveyed in individual collectives think that the administration pretends to listen to the opinion of the working people but is not undertaking any effective measures. And another 20 percent stressed that in their collectives the leadership is hostile to any, even creative constructive, criticism.

To a considerable extent, the raising of the role of labor collectives and the active influencing of production depend upon involving them in planning. Meanwhile, only half of those surveyed—49.4 percent overall in all surveyed regions—indicated that they have participated in this process. And 35 percent have participated in discussion only. Less than half noted their participation during the last 2 years in the verification of the fulfillment of any decision in their enterprise.

The data of the surveys indicate the fact that **in practice the unity of the ideological-political and economic approach to management is not always ensured**. Sometimes, in resolving a complex set of questions at the enterprise, only one criterion is taken into account—the narrowly economic criterion, which, in the final analysis, results in operational losses.

The brigade and other collective and contract forms of organizing and remunerating labor have great importance in the process of the development of the creative activity of the masses. They develop in the working people a feeling of being in charge and managerial habits and contribute to the achievement of a higher level of management of production as a whole.

More than 1.5 million brigades uniting almost 20 million workers have been established in industry. As shown by surveys carried out at nine machine building plants in

Leningrad, however, 40 percent of the brigade members think that the administration is not interested in granting them real rights to participate in management; more than 30 percent remarked that verbally they are encouraged to participate in management but that their opinion is not taken into account when it comes to the specific resolution of questions. There are many problems in the work of the councils of brigades and shops and frequently it is inefficient. According to the data of the same survey, 32 percent of the brigade leaders in Leningrad indicated that the council does not give them any help at all, 57.4 percent consider it insignificant, and only 10.2 percent think that it is a great help.

The activation of labor collectives, the establishment of an atmosphere there of socialist mutual help and high demands, and the teaching of working people to have a sense of being masters of production with full rights and great responsibility for the fulfillment of obligations to society are the subject of special party attention. The book by V.N. Ivanov equips activists in ideological work with knowledge and experience helping them to raise the role of labor collectives as primary units of self-administration and popular sovereignty. This is its value and topicality.

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## INVESTMENT, PRICES, BUDGET, FINANCE

### Changing Concepts Call for New GNP Measuring Methodology

18200018a Moscow EKONOMICHESKAYA GAZETA  
in Russian No 42, Oct 87 p 10

[Article by G. Zoteyev, Candidate of Economic Sciences:  
"On Evaluating Gross National Product"]

[Text] In our opinion, the conversion over to the new concept of national income and gross national product, as discussed in the article by Corresponding

Member of the USSR Academy of Sciences S. Shatalin (No.31), requires not only a theoretical-methodological comprehension of the measurements of economic growth but also economic-statistical evaluations of them, experimental computations, and alternative and methodical comparisons. On the basis of data supplied by USSR Goskomstat [State Committee on Statistics] on the operational results of the first 6 months of 1987, we undertook to carry out preliminary computations on the dynamics of the gross national product for the 1971-1987 period. This made it possible to uncover trends in the development of the national economy during the first 6 months of 2 years of the 12th Five-Year Plan, against the background of the three previous five-year plans, when negative manifestations and contradictions of expanded reproduction appeared.

The use of the indicator for gross national product to measure rates of economic growth was conditioned mainly by practical considerations and by the requirements of economic analysis: on the basis of USSR Goskomstat publications for the first 6 month periods, it was not possible to develop the characteristics of national economic growth, expressed by the indicators for national income.

Our computations of the dynamics of USSR gross national product for the initial 6 month periods during the 1971-1987 period were based upon the fact that the indicator for gross national product describes more completely the final results of economic activity and furnishes a more representative picture of the reproductive processes, since it reflects movement both in material production and in the socio-cultural sphere. Of importance also is the fact that its structure includes amortization funds — a most important financial source for capital investments. Hence the mentioned indicator describes more accurately the proportions for the distribution of production results in terms of consumption and savings. It is apparent from our computations that national income in 1960 amounted to 81.6 percent of the gross national product and in 1985 — 74.3 percent and this underscores the increased importance being attached to amortization deductions.

Gross National Product and National Income Produced (in current prices, billions of rubles)

	1960	1965	1970	1975	1980	1985
Gross national product	177.7	242.4	370.5	475.8	614.5	78.33
National income produced	145.0	193.5	289.9	363.3	462.2	577.7
National income (produced), in of gross national product	81.6	79.8	78.2	76.4	75.2	74.3

In the statistics for measuring national product and income, two methods are known for computing the indices for their growth — during the production stage and during the stage of final use. Both approaches are employed within the framework of annual measurements, each of which is important for a full description of the results achieved. Within the framework of semi-annual statistics, use of the "production stage" method for computing these indices is extremely doubtful.

First of all, this applies to the computation of net agricultural output, where owing to the seasonal nature of farming production expenditures are mainly encountered during the first 6 month period and during the second — it is possible to determine the results. The conditional nature of dividing up expenditures and results within the framework of 6 month periods and quarters is typical of those branches of the national economy where the production cycle exceeds 3-6 months. This gives an advantage to the method of "final use."

The following consideration played a substantial role in our computations. The importance of the indicators for national income, gross national income, gross national product, consumption, capital investments and others differed for measurements of the growth tendencies in the chronology for a month, quarter, 6 month period or a year. Whereas for annual measurements importance was attached to the scope of economic activity, the authenticity of the dynamics and the structure of the reproduction process, for quarterly and semi-annual statistics was attached to the trends in market conditions and to an evaluation of the trends being followed in the processes.

Based upon all of these prerequisites, the following logic is proposed for computing the dynamics of the gross national product based upon data for a 6-month period. Its structure includes three components: consumption of goods, services for the population and state capital investments.

### Consumption of Goods

In the reports by USSR Goskomstat, indices are cited for the sale of certain types of goods in the state and cooperative trade in comparative prices. During the 1971-1987 period, it was possible to develop dynamic ranks for 32 commodity groups and goods, having weighed these individual growth indices in accordance with the basic commodity turnover structure and to determine the overall semi-annual rate of growth in consumption. When selecting the structure for the scales, it was obviously necessary to take into account the existing distortions in the retail price structure. The use of the actual prices distorts both the structure of consumption and its dynamics.

Here is a picture of the structure of commodity turnover during the first 6 months of 1986; it was used by us in our computation of the overall consumption index in the gross national product structure (in percentages):

	Actual	Normative
Total, including:	100	100
Food goods	28.7	46.3
Light industry goods	21.8	15.8
Goods of extended use	11.3	11.3
Total scope of goods for computed index for growth in consumption in the structure for semi-annual gross national product	61.8	73.5
Other goods not included in the index computation	38.2	26.5

Use was made of 15 individual indices for goods produced, four for light industry goods and 13 indices for durable goods.

### Services for Population, Capital Investments

In order to compute the aggregate index for growth in services, use was made of three individual indices — domestic services, passenger turnover and the average semi-annual housing fund for the country. The domestic services structure includes that portion of services included in commodity turnover. It is difficult on the basis of semi-annual reporting to eliminate the index for growth in commodity turnover from a repeated accounting of domestic services. It is conditionally accepted that roughly one half of the domestic services relate to that portion which is reflected in commodity turnover.

In order to compute the index for the consumption of housing economy services, use was made of the procedure of a balanced build-up in the movement of the housing fund according to the situation at the beginning and in the middle of each year. Towards this end, the value for the placing in operation of housing during the first 6 months of the year is added to the housing fund at the beginning of the year. It was assumed that the housing fund would be completely withdrawn during the second 6-month period. The conditional average semi-annual value was computed using data available on the value of the housing fund on 1 January and 1 July of each year. Its dynamics were viewed as a description of the movement of housing economy services.

In the reports of USSR Goskomstat, capital investments are cited both as an absolute expression and in rates of growth. The absence of data on the technological structure of capital investments during the first 6-month period precluded the possibility of calculating the order for the 1971-1987 period, with the correction coefficients for the increases in equipment prices and in

construction-installation work, introduced into operation on 1 January 1984, being taken into account. The absolute volumes of state capital investments were computed based upon the semi-annual indices for growth and basic volume during the first 6 months of 1987 (in prices for 1 January 1984).

### Changing Trends.

According to our evaluations, the measure of the scope of the index which we defined for growth in the overall semi-annual value for gross national product resources is roughly 50 percent. The purpose of the index, as already mentioned, consists not of determining the level for the overall rates of growth in the national economy, but rather for evaluating its changing trends and the tendency towards an acceleration or deceleration in overall economic activity in the national economy by five-year plans.

#### Rates of Growth in Gross National Product During Initial Six-Month Periods (in percentages)

	1971-1975	1976-1980	1981-1985	1986-1987
Gross national product, including:	7.0	3.3	3.4	5.2
Resources for consumption (goods and services)	6.8	2.3	4.0	3.8
State capital investments	7.6	4.3	3.2	7.8

It is apparent from the table that during the initial 6 month periods of the 12th Five-Year Plan the dynamic nature of the economic activity of the national economy was higher compared to the 10th and 11th five-year plans and lower compared to the 9th. At the same time, there is some basis for believing that, based upon quantitative criteria for economic growth, a definite acceleration is taking place.

In our opinion it would be more correct to divide the 1971-1987 period into three periods, with each having its own specific level of economic dynamism and reproduction character: 1971-1975 — higher rates, 1976-1982 — slower rates and the 1983-1987 period — an increase in rates. This is borne out by the indicators for change in the speed of growth in gross national product (in rates of increase and in percentages):

1971-1975	1976-1982	1983-1987
7.0	3.2	4.3

During the June (1987) Plenum of the CPSU Central Committee, it was pointed out that at the junction of the 1970's and 1980's the rates of economic growth fell to a level which actually signified the onset of economic stagnation. The trend towards an intensification of the problems and contradictions of reproduction was aggravated by the index for growth in the gross national product. This was particularly apparent during the initial 6-month periods of the 1976-1982 period.

Two chief factors define the character of the change in the growth dynamics for the gross national product during these periods. The first — growth in animal husbandry and its role in the formation of consumption resources. The second — the increase in the production of primary energy carriers and construction materials and their participation in the creation of capital investment resources.

A sharp deterioration in the fuel and raw material situation and stagnation in the production of animal husbandry products during the 1976-1982 period brought about a slow-down in economic activity. And conversely, an improvement in the status of affairs in animal husbandry, metallurgy and the coal industry during the 1983-1987 period made it possible to stimulate economic growth somewhat compared to the 1976-1982 period. This is borne out by production data for some of the more important raw material resources during the initial 6-month periods (in percentages of an increase or decrease):

	1971-1975	1976-1982	1983-1987
Rolled ferrous metals	4.2	0.9	1.7
Lumber (less timber procurements by kolkhozes)	1.4	-1.2	2.1
Cement	5.3	0.2	2.3
Meat (purchases)	6.1	-0.8	7.5
Milk (purchases)	5.2	-0.5	5.7

A slow-down in economic growth during the 1976-1982 period and a definite acceleration during the 1983-1987 period, associated with the extractive branches, testify to the excessive dependency of the economy upon the natural factor, the adverse effect of which exerted a special influence in the fuel and raw materials sector.

### General Conclusions

The analysis provided herein emphasizes the fact that the tasks concerned with scientific-technical, structural and organizational-economic restructuring must be directed primarily towards changing the economic structure in which material and energy intensive technologies predominate, the formation of highly technological and

scientific-intensive branches and a modern industrial consumer complex and towards a redistribution of resources in the socio-cultural sphere.

The problems concerned with measuring the dynamics of gross national product and national income, within the framework of semi-annual statistics, are important not only for the purpose of a correct evaluation of the prevailing state of reproduction and understanding market conditions, but also for organizing a forecast for growth in the national economy for an entire year and developing a correct current economic program for the second 6-month period in the interest of overcoming negative trends and intensifying in a stable manner the influence of dynamic sources of economic growth.

Certainly, a measurement of the dynamics of gross national product, based upon semi-annual statistical data, cannot be carried out to the exclusion of the overall concept of an annual measurement of the volume and structure of this most important indicator.

Included among the more difficult practical problems associated with annual measurements of gross national product is the development of a system of price indices from the standpoint of branch and functional (consumption, capital investments, increase in supplies and so forth) components of the gross national product and the removal of turnover tax from its excise portion. Yet to be developed also are those problems concerned with the formation of a methodology for a conditional economic evaluation of those elements of reproduction which are not covered by commodity-monetary relationships (free public health and educational services, personal services which do not fulfill an economic function directly) and other specific-methodological aspects of product and income statistics. Thus a conversion must be carried out from words to work and from intentions to actions in the sphere of improvements in the economic measurements of economic development.

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## HOUSING, PERSONAL SERVICES

### Housing Problems in Armenia Cause Concern

18270020 [Editorial Report] Yerevan KOMMUNIST in Russian 10 November 1987 carries on page 1 a 1,000-word editorial entitled "The Housing Question." The article begins by noting that builders prefer to avoid dealing with housing matters when supply and demand is the issue. When they must write a report, they merely "juggle figures." The discussion stresses the point that although there has been a lot of recent construction in Yerevan, the amount is insufficient to meet the demand. There are still many families living in semi-basements, in small dilapidated dwellings, and in tight communal apartments. Because prioritized registration lists at industrial enterprises are so long, one can wait from 15 to 20 years for an apartment.

The article states that concerned citizens, in letters to the editor, express doubts that the housing problem will be solved by the year 2000. They complain about the slow speed of construction, and also claim that they cannot move into a new apartment without electricity, water, or with an elevator which is out of order.

The editorial emphasizes that "it is paradoxical but a fact. People wait years for an apartment and having received one, don't rush to move in. Unfortunately, the local soviets couldn't care less. The main thing for them is that authorization was granted which required the tenant to pay for the dwelling and communal services. After he has paid, he is provided with an apartment." New homeowners express dissatisfaction over unfinished dwellings prior to occupancy. This, according to the article, is particularly true in the winter. The authorities are criticized for impropriety in signing acceptance reports on inadequate housing.

In conclusion, the report evaluates unfair housing distribution practices in Armenia. People do not speak out after waiting years for an apartment for fear they will be dropped from the list. It is felt that the best solution for gaining the individual's trust and support is "to regulate housing distribution in an open matter, and to remove the element of secrecy so that one will know why he was second on the list and then suddenly became ninth."

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## ENERGY COMPLEX ORGANIZATION

**Management of Electric Power Entities Studied**  
*Moscow ENERGETIK in Russian Sep 87 pp 1-3, Oct 87 pp 1-4*

[Article by A. I. Baranovskiy, chief, USSR Minenergo (Ministry of Power and Electrification) Main Economic Planning Administration, under "27th CPSU Congress: Advances in Restructuring" rubric: "The Economic Mechanism for Administering the Work of Power-Engineering Associations and Enterprises"]

[Sep 87 pp 1-3]

[Text] The fundamental feature in the development of an economic mechanism for administering production at the present stage is the raising of the priority of economic methods in orienting labor collectives toward achieving high final results.

An economic control mechanism is designed to create economic conditions which make it possible both to meet national economic targets and to satisfy the social and economic interests of the labor collectives and every worker. In the practice of administration, interests are reconciled by establishing close ties between work results, production resources, wages and labor incentive procedures.

At present, practically all basic forms and methods of the economic mechanism used to administer production, i.e. the economic indices, planning, the economic incentive, financing, price-setting and cost accounting—are undergoing great changes. At the same time, the most general trends for improving the control mechanism during the 12th Five-Year Plan should be set apart. They are:

an intensification of the five-year plan's role in the economic and social development of production associations and enterprises. The five-year plan has become the primary matrix for planning the work of our basic production units;

a transition to normative planning by expanding the circle of major economic norms and reducing the number of planned indices. Norms are authorized within the five-year plan, are stable, and are not subject to change;

implementation of the principles of full cost accounting and self-financing in the work of production associations and enterprises;

to see that the rights of labor collectives—the basic production units—are ensured;

to give maximum consideration to special sectorial features when developing and introducing new economic indices and administrative methods.

Economic indices and targets are of paramount importance to the economic control mechanism. Their structure and the manner in which they are used in planning, in the assessment of results and in providing economic incentives in the work of labor collectives in large part determines the effectiveness of improvements in the administrative system overall. Economic indicators are the means by which relations are regulated and by which we arrive at agreements concerning the interests of various levels of control.

Let us consider one of the major aspects—the structure of the economic indicator system, which structure determines the directive (compulsory) nature of these indices concerning the planning of the work of the basic production units and in the final analysis determines the relationship between centralized and independent administration.

From this position, the following groups of indicators should be set apart: directive indicators (which are also made up of limiting indicators i.e. ceilings, for example the ceiling on centralized capital outlays and on the non-industrial group's wage fund), normative indicators, estimated indicators and information indicators. The directive (approved) and normative indicators are used to set the form for the national economy's requirements regarding the work of the basic production links. Authorized indicators are used to determine the mandatory or limiting level of leading production parameters (output production volumes in physical terms, profits etc.).

Normative indicators establish the connection between the results of work and the necessary production resources (manpower, material, financial etc.), they determine the interrelation with the state budget and superior organizations etc. The approved and normative indicators are generally accepted, and their role in the control process is fairly clearly defined.

There is some uncertainty attendant to estimated indicators. Under the new system of economic management, they are used in almost all sectors. However, official normative documents and instructions fail to provide a procedure for using this group of indicators in planning.

Estimated indicators are prescribed in the plan, but in contrast to approved indicators, they reflect less important features of production associations' and enterprises' work, and are thus of subordinate (secondary) importance. However, the presence of estimated indicators in the plan stems from the need to have the information necessary for making decisions along related lines of activity broken down by areas or on a higher administrative level etc. For example, commodity output is planned as having been estimated for production associations and enterprises for determining sectorial and territorial proportions.

Estimated indicators, as a rule, are not used to evaluate the results of the work of labor collectives or to form economic incentive or bonus funds. We feel it advisable to grant labor collectives the right to amend estimated indicators independently when changing production conditions rather than using plan indicators.

It should be emphasized that when state planning discipline is being greatly intensified, there are stricter requirements for correctness in authorizing and bringing planning indices to production units. Indicators cannot be included in the plan without providing them with corresponding normative documentation.

At the same time, practice has shown that when approved and estimated indicators are lowered, there arises a need for additional information on a definite range of questions. This information is necessary to the taking of administrative decisions. The reduction in the number of planning (approved, normative and estimated) indicators is accompanied by a need for reference data. For example, starting in 1987, no plan has been established for electric power and heat production for power systems and power stations, but we need to know how much power they are generating in order to be able to estimate commodity output, disposable output, profits etc.

Systemizing these data as part of a group of information (reference, accounting) indicators and bringing them to the production collectives facilitates the qualitative substantiation of worked up plans and the objective assessment of the results of their fulfillment.

Information indicators are not put in the plan for associations and enterprises, but are issued as supplements to the plan, albeit outside the strictures of the plan and not among the plan targets.

The lines of inquiry and special features thus far examined for improving the economic administrative mechanism were almost completely taken into consideration during the transition to the new system of economic management of the associations and enterprises in the "power engineering" sector.

This mainly concerns the planning of volume-related indicators in physical terms and in terms of cost. As is well known, it is primarily demand which determines electric power and heat production volumes. Where there is no demand, there is no need to generate additional power, since there is no way to store it. Moreover, since power production is associated with the burning of fuel, when there is no demand for power production, this causes direct harm to the national economy.

The experience gained in years gone by has shown that approving volumetric indicators in the plan for power systems and power stations has prompted power-producing enterprises to fulfill the plan for producing and supplying power when the consumer had no need for it.

This has also been fostered by the motivation of local party and soviet organs, since volumetric indices are counted as part of the indicators for the rayon, city etc. All these things combined caused certain discrepancies in evaluating the results of the work of the power systems and power stations and failed, in the final result, to help in the implementation of this country's national economic policy to conserve power.

Despite the obviousness of those factors which keep the anti-spending mechanism from being put into effect when planning volumetric real and cost indicators for power engineering associations and enterprises, this approach predominated in years gone by, which engendered numerous plan corrections.

The development of the economic administration mechanism for the new management system led to the formulation of the task of neutralizing negative effects and imperfections in planning volumetric indicators. The following sequence has been provided to deal with this task.

1. No real indicators for electric power and heat production volumes are to be planned for power systems and power stations. Electric power and heat production volumes are authorized only in the five-year and yearly plans for the ministry overall.
2. Estimated growth rates for commodity output are prescribed in the five-year and yearly plans for power systems and power stations for the purpose of defining the dynamics within which production will develop and for evaluating structural relations and sectorial and territorial proportions.
3. Estimates are used to determine the volume of disposable output in the annual plans for power systems.

Since the volume of electric and thermal power is not planned in physical terms for power systems and electric power stations, these facilities have been given the right to refine their estimated planned volumes of commodity and disposable output depending on changes in the levels at which electric power and heat are generated. The sequence for this refinement was defined in the USSR Central Statistical Administration and USSR Minenergo joint letter of 30 April 1987. At the same time a possible alternative is being worked up concerning the exclusion of commodity and disposable output from the range of indicators planned for power systems and power stations.

Under the new economic operating system, the established procedure for planning volumetric indicators somewhat diminishes the drive and motivation of the production collectives to go to any length to meet these indicators.

At the same time, there is some apprehension that this approach is in conflict with the primary task of providing the national economy with a reliable power supply. The following needs mentioning in this connection. In the first place, the exclusion of real production volume indicators from approved indicators does not denote any uncertainty about power systems and power stations: electric power and heat production data, which have been refined within the ministry's overall plan calculations are communicated to each subdivision for use as information indicators. In the second place, under the new economic operating conditions, the role of dispatcher load curves has been made considerably more important thanks to the relation between meeting them and the awarding of bonuses based on the results of basic work.

The most important authorized index in the five-year and yearly plans for associations and enterprises is the efficiency coefficient for using installed capacity. This is a complex indicator with regard to the manner in which it controls the production of power, since it is an approved plan indicator and serves as the basis for forming funds and awarding bonuses.

As we know, the efficiency factor is equal to the relation of the number of workers and installed capacity. Essentially, it reflects the single most important parameter—the readiness of the power system to carry a load, i.e., the power system's potential for producing power.

One of the major aspects highlighting the tremendous significance of the efficiency coefficient for controlling power production is the fact that this is the sole indicator used to form planned incentive funds for the power engineering sector (operating power for power stations).

In this connection, it might be well to emphasize the notion of the priority status of plan-based formation of incentive funds over the actual extra charge for overfulfilling (fulfilling) fund-forming indicators. Some people hold that it doesn't matter how incentive funds are formed; the main thing is to keep adding to them. But this is not true. Under a planned administration, balanced energy production and consumption must lead to proportional national economic development. And this means that the greater the planned efficiency coefficient for installed capacity use, the greater its reliability and its potential for conserving energy. This national economic aspect of the problem reflects the interests of our society.

The other side consists of the power systems' and power stations' cost-accounting interests, which find expression in the striving to enlarge economic incentive funds. In principle, the interests of the national economy and the production collectives agree as far as establishing close ties between increases in the efficiency coefficient and the incentive funds, which are increased in proportion to increases in the efficiency coefficient.

Planning funds from the preceding year are used as a base for strengthening the tie between national economic and cost-accounting interests when forming planning funds. In other words, the total increase is not included in the base, only the planned portion. Actually, the extra charge for incentive funds, which is not provided for in the plan, has a one-time nature and has nothing to do with forming planned economic incentive funds for the following year.

Experience in utilizing the efficiency coefficient for use of installed capacity in 1986 brought to light a number of difficulties connected with using it administratively.

[Oct 87 pp 1-4]

[Text] The efficiency coefficient for use of installed capacity (hereinafter shortened to the efficiency coefficient), as with any indicator perceived as a coefficient, is characterized by a limit equal to 1, or 100 percent. This is used to determine the primary difficulty in using this indicator vis-a-vis economic incentive.

Estimates show that the limiting value for the efficiency coefficient for the sector as a whole, based on repairs of power engineering equipment in accordance with normative time rates and normative inter-service time periods does not exceed 85 percent. According to the 1986 report, this value averages 73.89 percent for USSR Minenergo, and swings between 57.86 and 87.73 percent for the main administrations and associations and main production administrations and republican ministries. The boundaries of this interval are considerably broader for power systems.

As the efficiency coefficient increases, every percentage point of increase is secured with a great deal of effort, the concomitant diminution of its potential for further increase and heightened risk of non-fulfillment of the target related to this indicator. At the same time, the acting incentive system is such that even in a situation where a power system's efficiency coefficient level is fairly high, the least non-fulfillment of this target causes substantial losses in incentive funds and bonuses based on basic work results. This is why associations would rather overfulfill the target by 2-3 percent than use a maximally stepped-up plan. This is in the first place.

In the second place, when state planning discipline is greatly intensified, rigid monthly planning of the efficiency coefficient has a negative effect on the repair campaign: taking power engineering equipment out of service for long periods of time for major overhauls leads to non-fulfillment of the efficiency coefficient target (the operating power target for power stations). This is why enterprises prefer to keep capacity in reserve, rather than undertake repairs ahead of schedule and end up without incentive and bonus funds. The same situation turns up during retooling and renovations.

There are two ways to solve this problem. The first is by granting the right to define the efficiency coefficient (operating power) for power systems and power stations by the month where they take power engineering equipment out of operation for ahead-of-schedule repair within the bounds of the interval authorized for the year. This approach has been authorized for use in 1987.

Another way is by changing over to planning the efficiency with which installed capacity is used through introduction of the concept of productive capacity. Productive capacity is installed capacity minus the capacity of the equipment withdrawn for repairs, according to standards. Then the efficiency coefficient is considered as the relation of operating power to production capacity. This approach substantially reduces the effect of the capacities being repaired on the efficiency coefficient. Implementing this approach, however, has been made quite difficult, since the five-year plan has been approved.

In the third place, the structure of generating capacities, particularly the presence of TETs' [heat and electric power stations] and GES's [hydroelectric power stations] has a great deal of influence on the absolute level and dynamics of the efficiency coefficient. The primary proposals have been reduced to the fact that in order to take into account the share of TETs', for instance, in power systems, one must use correction factors, which help to control the formation of economic incentive funds.

It is advisable for hydroelectric power stations to increase their operating power so as to include it in only the section which has been provided with organizational and technical measures aimed at eliminating limitations on capacity, at reducing the time needed to make repairs, at putting capacities into operation ahead of schedule and familiarization with capacities recently put into operation, and not taking into account those changes determined by hydrological conditions.

Fourth, the level and tendency for change in the efficiency coefficient depend to a large extent on the power engineering equipment structure regarding its manufacturing time-table. Fixed capital ages, and this process is accompanied with a worsening of their power-producing characteristics. At present over 21 percent of the sector's fixed industrial-production capital is worn out. This is why 52 million kW of installed capacities which have worked out their rated service life need to be replaced.

There are also factors which have considerable influence on the efficiency coefficient and its use in the formation of capital. For example, every percent of growth in this coefficient in power systems with excess capacities is easier to attain than where there is a shortage of capacities. This is attested to in particular by the fact that in

power systems with surplus capacities the efficiency coefficient target is overfulfilled by 1.5-fold more than in power systems with insufficient capacities (according to data from 1986).

Even the above limited list of factors which influence the efficiency coefficient indicator for operating power-producing capacities points to the need for a fairly flexible approach to using the efficiency coefficient when forming incentive and bonus-awarding funds.

One practicable direction is to grant major rights to those associations which are capable of giving most complete consideration to the special features of power stations and other power system enterprises. On the ministry level it is sufficient to limit these to the two or three most substantial factors. This approach will help to enhance the independence of our power systems and enterprises, to expand their rights and to raise the level of responsibility for the final results of their work, which is in complete compliance with the decisions of the June 1987 CPSU Central Committee Plenum.

The following has been established as the sequence for forming material incentive funds in power systems and power stations:

a quota for forming material incentive funds has been approved in five-year and yearly plans for every percent of growth in the efficiency coefficient for using installed capacity (or operating power, for power stations). Economic standards can be differentiated by individual associations and enterprises;

the material incentive fund is formed on the basis of the amount of this fund as determined in accordance with the base year plan and the total growth of the fund as calculated in accordance with prescribed norms for each percent of growth in the efficiency coefficient for use of electric power stations' installed capacity compared with the plan value of this coefficient during the base year.

Individual associations and enterprises can set up a material incentive fund in accordance with the norm for forming this fund for each percent of the efficiency coefficient. In these conditions, the five-year and annual plan quotas for incentive fund formation are authorized for an absolute magnitude of 1 percent for the efficiency coefficient.

The setting of the norms for a 1 percent increase in the efficiency coefficient or for a 1 percent absolute magnitude, as well as the differentiation of the norms, make it possible to take the influence of the above factors into account to a definite degree when forming incentive funds for power systems and power stations. This approach ensured priority status when the 1987 incentive funds were formed for power systems having an efficiency coefficient higher than 80 percent. The funds

for some subdivisions were formed taking into account the wear on fixed capital (for example, for a number of Glavuralenergo [Main Urals Electric Power Administration] power systems).

At the same time, practice poses new problems, the solution to which will bring about improvements in the use of installed capacity. Thus, in connection with the proposed cut-back in electric power production at AES's and GES's, power production volumes at TES's will have to be increased during 1988 by no less than 54 billion kW/hrs above the five-year plan target. Consequently, power systems and power stations will have to oriented towards the implementation of counterplans, which will provide for additional electric power generation. To do so, as we know, will require the creation of appropriate economic conditions which would motivate associations and enterprises to take on counter obligations.

There exists an economic mechanism for material stimulation of industrial counterplans. It is based on the extent of increases of indicators and norms. However, when approving norms for forming incentive funds calculated on an absolute amount of 1 percent of the efficiency coefficient, certain features become evident which preclude the use of the methods now being used.

The discrepancy consists in the fact that in accepting additional yearly plan obligations for increasing the efficiency coefficient above the five-year plan, say 1 percent, a power system obtains a total increase in its material incentive fund of 1.2-1.3 percent, at a time when a 1 percent increase in the efficiency coefficient as distributed on the average throughout the ministry in the plan amounts to 7.4 percent. It might be well to point out that approving the norms in this fashion gives rise to a situation similar to that which occurs when the plan is overfulfilled or non-fulfilled or when yearly plan targets are approved which are lower than those in the five-year plan.

USSR Minenergo has prepared proposals which take the above fund-forming features into account. The essence of these proposals lies in using, in the above instances, the growth target for forming additional funds and extra charges for incentive funds equal to the amount of the percentage of the increase of the norm for the current (plan) year as compared to the norm of the base (preceding) year of the five-year plan.

The efficiency coefficient for installed power use has been made significantly more important because of its use, starting in 1987, in calculating labor indicators: the increase in labor productivity in power systems is determined taking into account the changes in the efficiency coefficient in the reporting period; wage funds are allocated for industrial production personnel employed in power-engineering associations based on the wage fund for operating enterprises, which is calculated in accordance with the approved norm, and for enterprises and facilities which have recently been put into operation,

with the fund recalculated at a coefficient of 0.3 for each percent of overfulfillment (non-fulfillment) of the plan according to the efficiency coefficient.

The power system recalculates the wage fund in accordance with the results of its overall work, taking into account the component structural units and independent enterprises. The power system also distributes the sums of the increase (decrease) in the wage fund to its subordinate enterprises depending on the degree to which they have participated in fulfilling the plan according to the efficiency coefficient and conveys the wage fund which is subject to payment to USSR Gosbank departments to the enterprises' locales.

In order to enhance the efficiency with which fuel and energy resources are used, provision has been made for additional allocations, according to work results, into the material incentive fund amounting to 70 percent of the total saved fuel at the actual prices during the period under review. The amount of fuel saved at power stations is determined based on their normative power producing characteristics and the actual operating conditions of their equipment.

An overexpenditure of fuel causes the material incentive fund to be reduced to the same extent as for fuel savings, by no more than 10 percent.

It should be emphasized that the transition to the material incentive for saving fuel, which saving is calculated on the basis of standardized power-producing characteristics, is conducive to the maximal utilization of electrical capacities, particularly TES's.

Our new system of economic operation has greatly expanded the rights of power systems and enterprises with regard to forming a labor plan based on normative planning. They have been authorized the following labor allowances and ceilings:

a wage fund allowance for industrial personnel involved directly in production at associations and enterprises, except for maintenance personnel at power and thermal networks, per unit of installed electrical and thermal capacity;

a wage fund allowance for industrial personnel directly involved in production in associations and enterprises which service power networks, per 100 km of power transmission lines, and which service thermal networks, per 1 km of said networks;

a wage fund allowance has been provided for repair enterprises per unit of installed capacity throughout a power system;

a wage fund allowance for supervisory and engineering-technical personnel;

a wage fund for workers at enterprises and projects which have recently put into operation;

a wage fund for non-industrial personnel;

an increase in labor productivity, calculated according to the installed capacity maintenance factor.

The number of workers is determined independently by associations and enterprises, on the basis of installed capacity or other indicators and the target for labor productivity growth, and is reconciled with territorial planning agencies at the development stage for five-year and yearly plans.

Bolstering the material motivation of associations and enterprises in increased labor productivity comes by making additional increases in their incentive funds according to a norm of 2.5 percent of the planned amount of this fund for every percent of growth in the maintenance coefficient for installed capacity by the base year on condition that the target for labor productivity increase is met. Moreover, savings made in the wage fund for associations are recalculated at year's end into the material incentive fund.

Analysis of the economic mechanism now in use for administering production shows that it is based predominantly on real indicators (the efficiency coefficient, power networks' electric power losses, the rate of fuel consumption for electric power production, the maintenance coefficient for installed capacity etc). Economic incentive funds are also formed on the basis of real indicators. However, the addition of funds, as is commonly known, is determined by the presence of profits. At the same time, power system profits are fairly often lower than called for in the plan, for a number of objective reasons. What's more, a strict orientation to fulfilling the plan for profits leads to negative tendencies similar to those already examined as applied to volumetric cost indicators.

In this connection, when profits are insufficient because of fluctuations in electric and thermal power production volumes stemming from a change in the actual level of demand for them and in the structure of the fuel used, or because of reductions in the amount of electric power generated at hydroelectric power stations or a reduction in the basic fee per group of consumers using connected 750 kW/A and higher power, it has now been authorized to keep the sum in excess of the fines greater than the amount paid off (from the USSR Minenergo authorization) at the disposal of the power systems for the purpose of adding it in accordance with approved incentive fund allowances.

In order to ensure financial stability under the new economic management system, where power-engineering associations have insufficient profits to cover regularly scheduled outlays provided for in the plan for its distribution, it has also been authorized to use the amount in excess of the fines over and above the amount which has been paid off.

USSR Minfin [Ministry of Finance], USSR Gosplan and USSR Minenergo have agreed on a procedure for applying fines for augmenting economic incentive funds and for covering regularly-scheduled outlays. Provision has been made for the ministry to centralize 40 percent of the amounts in excess of obtained fines above the amounts paid out, which makes it possible to direct funds from the above-mentioned centralized fund to the power systems which can justify using them, but which have no financing source.

In summarizing the work done in 1986-1987 to improve the economic methods for administering the "power engineering" sector, the following needs to be noted.

The introduction of the efficiency coefficient for use of installed capacity and the standardized rates of consumption of fuel used to generate electric power as basic indicators, and the diminution of the role played by profit have improved the ways operating capacities are used and have thus brought about considerable increases in operating power, and have stabilized electric current frequency at a normal level. This is the main thing.

The above-named indicators are also definitely orienting this sector towards implementing a policy of resource conservation. The abolition of planned volumetric natural indicators for electric power and heat production (which has been approved as of 1987 only for the ministry as a whole), as well as the sharp reduction in the significance of cost-related volumetric indicators—commodity and disposable output (the plan refined at the end of the month is being adopted on the level of actual indicators) are all helping to achieve this goal.

The aggregate of all these factors has also eliminated the pre-1987 contradictory assessments of the work of the power engineering associations, which were made by local party and soviet organs.

The primary results of improving the economic methods used to administer the sector over the last two years corroborate the tremendous potentialities which are built into the economic mechanism which makes it possible to find criteria, indicators and incentives which organically conjoin the interests of the national economy, the labor collective and of every worker.

There is a good probability that the basic planning and fund-forming indicators in upcoming years will be the efficiency coefficient for using installed capacity and the normative fuel consumption rate and the way the use of real volume and cost indicators comprises the basis for the further development of a system of economic methods for administering electric power engineering.

The transition to self-financing and full cost-accounting and the implementation of the USSR Law of State Enterprises (Associations) are determining a number of special features:

a considerable raising in the level of the financial aspects in the work of associations and enterprises. Profit will remain the determining indicator for forming and augmenting an economic incentive fund;

the ruling out of the possibility of redistributing profits among power systems;

the introduction of economic liability for superior units for the validity and balance of plan targets assigned to associations and enterprises.

It might be well to point out that the level of planning and strategic administration of power production and distribution which now exists in this sector does not meet the requirement for ensuring stability and balance in the plan as regards all the indicators.

The economic mechanism now being used is being further developed in the USSR Minenergo commission's draft resolution for improving the economic mechanism and for planning and administering the transition to full cost-accounting and self-financing, beginning on 1 January 1988, of seven power systems: Bashkirenergo, Kostromaenergo, Kievenergo, Lenenergo, Litovglavenergo, Mosenergo and Sverdlovenergo. The draft resolution has been discussed by a USSR Gosplan working group.

This document is meant to improve the basic active principles used to manage USSR Minenergo associations and enterprises under full cost accounting and self-financing, taking into account the special features associated with the "power engineering" sector, and the Main Points of the Draft Resolution are:

the power system is to be the basic unit to which The USSR Law on the State Enterprise (Association) is disseminated;

the number of plan indicators approved and calculated for power systems is to be reduced. The production-related consumption of electric power used for transmission into networks and the fuel for released energy are to be specifically ruled out;

plan, fund-forming and bonus-related indicators of structural units (power stations, network and repair enterprises etc.) are determined independently by the power system, taking into account their special features, as based on standard USSR Minenergo recommendations.

In conclusion we need to dwell on the question of the formation of the USSR Minenergo centralized reserve fund, which is used to make up for temporary profit shortfalls caused by actual conditions deviating from the norm as provided for by the plan, i.e., reduced power demands, limited hydraulic resources etc.

The need for this fund has been realistically acknowledged. The ministry presently has a reserve fund made up of the sum in excess of fines obtained over amounts paid out. These funds are also used to make up profit shortfalls.

The proposal to create a special reserve fund as part of the plan for distributing USSR Minenergo profits has been formed in the above-mentioned draft resolution on the changeover of the seven above-named power systems to self-financing and full cost accounting.

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## FUELS

### UkSSR Coal Industry Meetings Held

Kiev UGOL UKRAINY in Russian No 10, Oct 87  
pp 46-47

[Article: "Measures Taken by TsBNTI [Central Office of Scientific and Technical Information] of MUP [Ministry of Coal Industry] of UkSSR"]

[Text] In June 1987 Makeyevugol [Makeyevka Coal Mining Association held a conference of a section of the Scientific and Technical Council (NTS) of the mine surveyor and geological services. The topic, "The State of the UkSSR Coal Industry's Raw-Materials Base and the Tasks of Raising the Level of Extracting Reserves from the Ground During Mining," was examined. After hearing and discussing the reports and addresses, the conference's participants noted that the main tasks set for the coal industry are: to provide for the mining of 780-800 million tons of coal throughout the country during 1990, to improve the storage and make more rational use of the underground resources, to reduce coal losses during excavation, to resume operations at reserves that are under objects being protected, and to increase mining by the underground method further. The assets of operating underground and strip mines as of 1 Jan 87 numbered less than 25 percent of the industrial-category of those those throughout the republic that are considered by the All-Union Geological Inventory. The reserve inventory for making up for abandoned capacity comprises about 100 percent of the productive capacity of existing enterprises. Many of the abandoned underground mines have a reserve for revival and extension of service life. However, in most cases, TER's [feasibility computations] for their development and the expediency for reviving the reserves are lacking, and the State Budget is not making grants for detailed exploration. The prognosis of reserves on the floors of existing underground mines is not always being confirmed. The forming of above-norm losses is provoking great anxiety.

In order to improve the status of the branch's raw-materials base and to reduce the amount of coal lost in the ground during underground mining, the conference's

participants in one section adopted recommendations, in particular, that the plan for geological exploration be revised in order to provide for a reevaluation of the reserves of the floors of existing underground mines and reconfirmation of reserves at which there has been no production for more than 15 years, and that the status of exploration of the floors of mines of the Krasnodonugol [Krasnodon Coal Mining Association] be examined and measures be taken to study more closely the floors of the Donetskaya, Pobeda, imeni Barakov, Severnaya, Sukhodolskaya and imeni 26th syezda KPSS mines, the Krasnodarskiy-Yuzhnny section, and others.

ShPU [Underground Mine Administration] No 4 of Voroshilovgradshakhtoprokhodka [Voroshilovgrad Underground-Mine Tunneling Trust] conducted a school, "Organization of High-Speed Tunneling of Vertical Bores." The participants were familiarized with the experience in high-speed tunneling of an auxiliary bore at the Underground Mine imeni Artem (Voroshilovgradugol) by V. I. Gorelyy's brigade, which in May 1987 drove 91 meters of bore under a plan for 40 meters. The inside diameter was 8 meters, tunneling diameter 8.6 meters, and the depth was 606 meters. The bore is being advanced by drilling through strong sandstones and sandy and clayey shales. MPP-9 elevating machines with BPSM-3u buckets (beginning at 400 meters depth they were replaced by BPSM-2u buckets) and KS-2u/40 rock-loading complexes are in operation.

Problems of organizing a mechanical service and mine-survey servicing during the period of high-speed penetration were examined. Recommendations were adopted: that the matter of the manufacture in 1988 of BAS-1 and BUKS-1u/5 drilling machines, quickly detachable connections for compressed air pipes and for instruments for ONK cable restraints should be solved; that VNIIOMShS [All-Union Scientific\*Research Institute for the Organization and Mechanization of Mine Construction] be charged with developing a technology for using a resin which will enable the excess of rocks to be reduced to a minimum during drilling and blasting operations; and that standards be set for penetration of vertical bores and for reinforcing work as a function of their diameter, thickness of support, and type of reinforcement. The penetration of holes for waste removal is executed with the use of anNPU above-the-bore arrangement.

Donetskshakhtoprokhodka [Donetsk Mine Tunneling Trust] conducted a school, "Experience in Raising the Effectiveness of Drilling and Blasting Operations for Sinking Vertical Bores with a View to Reducing Cement Consumption and an Excess of Blasted Rock." The participants became familiarized with the peculiarities of performing drilling and blasting operations in an area of artificial freezing of rock and of sinking a vertical bore at an average rate of 70 meters per month at the Trudovskaya Underground Mine, where the influx of water is

higher than 20 cubic meters/hour and at the Butovka-Donetskaya Underground Mine (Donetskugol), and in rock whose strength is greater than 10.

Recommendations were made: that intermediate outlining blast holes 1.5\*1.7 meters deep be additionally drilled when a peripheral series of blastholes are drilled by BUKS-1m installations; that the recommendations on drilling and blasting work made by BIOGEM [All-Union Scientific-Research and Design-Development Institute for Draining Mineral Fields, Special Mining Operations, Mine Geology and Underground Surveying] be used, after coordination with Gosgortekhnadzor [State Committee for Industrial Safety and Mine Inspection], when making bores in a zone of artificially frozen rock; that, in order to improve drilling and blasting operations when bores are sunk where the influx at the mine face is 6-8 cubic meters per hour, a scheme for recovering water with collars be used, detouring it with hoses into a special tank at a sinking platform and reloading it into buckets, bypassing the mine face; that, where influxes are less than 20 cubic meters per hour, tanks (they should have discharge valves) be built in the bore's support or on a temporary platform, for collecting water with collars, and that the water be pumped out to the surface by special sections and unloaded on a below-grade platform; that, when sinking bores through rock with a strength of 12-17, polyethylene tubes filled with water be used at the bottom part of the blasthole, with a view to reducing the amounts of rock collected; that the problem of mastering in 1988 the series manufacture of KTP-52-25 drill bits be solved; and that VNIIOMShS develop a technology for plugging rock shattered by an explosion.

In Donetsk an All-Union school of advanced experience, "Organization of the Construction of Housing and Social and Domestic-Amenity Facilities by the In-House Method," was held, based on the Underground Mine imeni Sazyadko, the Mine Administration imeni gazeta *Sotsialisticheskiy Donbass* and the Underground Mine imeni 60\*letiya Sovetskoy Ukrayiny. During the 11th Five-Year Plan, 36 multistory apartment houses with 2,017 units with a total space of 108,500 square meters were built and introduced, and, since the start of construction, that is, since 1978, 60 apartment houses with 2,623 apartments with a total space of 142,760 square meters, have been built and introduced by Donetskugol Association mines. During the 12th Five-Year Plan it is planned that 137,000 square meters of housing in 3,600 apartments, 9 recreation bases, 2 clinics, 2 athletic complexes, and 7 kindergarten annexes be constructed by the in-house method, and that assistance be extended to the construction of 200 individual houses.

Speeches addressed the questions of: organizing the construction of housing and social and domestic-amenity facilities by the in-house method in the Donetskugol Association, in light of 27th CPSU Congress decisions; the participation of trade-union organizations and the execution of social control over construction progress

and quality; and the development of design and budget-estimating papers, the financing procedure, and organization of the supplying of materials and equipment and of transport.

With a view to studying advanced experience in organizing machine processing of statistical reporting and the issuance of information for integrated mathematical-economics analysis, a trip by an integrated brigade of specialists to Minsk, to the Belorussian SSR TsSU [Central Statistical Administration], was organized. The brigade included specialists of UkrSSR Minugleprom [Ministry of Coal Industry], the GBTs [Main Computer Center], and production associations.

With the help of the Unified System of Electronic Computers, 68 reporting forms are processed with the use of electronic information-processing complexes. The complexes' software, which was developed by regional computer centers, which input into the USSR TsSU, is unique for each form. The programing equipment introduces the processed information into the Iskhod ABD [automated data bank]. These resources, using mathematical-statistics methods, allow issuance of Dannyye [Data], Svodka [Summary], Dinamicheskiy ryad [Dynamic Series], Struktura [Structure], Gruppirovka [Grouping], Prognoz [Forecast], Tendentsiya [Trend] and Faktornyy analiz [Factor Analysis] type information, and also any desired queries to be received in documented form and on the video terminals of local and remote displays. The SUBD [data-base control system] Iskhod calls for use of the resources of remote computers which are connected to a network of dedicated communications channels.

The brigade studied experience in machine processing and the issuance of statistical reporting information for comprehensive mathematical-economics analyses, and specimens of processed statistical forms. It has been proposed that this experience be studied and disseminated within the coal industry.

Based on the IVTs [computing and data-processing center] of Sverdlovantratsit [Sverdlovsk Anthracite Association], a school, "Study of the Work Experience of the IVTs in Software for the Production Association" was held. The Sverdlovantratsit Association's IVTs has gained positive experience in developing information retrieval systems based on YeS-7920 display complexes. Since January 1978 the IVTs has been operating a system for depicting on video terminals tables that describe the association's work that has been implemented in the ADABAS environment and the interactive applied language NATURAL.

The informational data bases on basic production, labor and wages, and the supply and equipment resources that are being operated in the IVTs's have enabled the association's staff to be provided with information on the computation and analysis of technical and economic indicators of the enterprises's production economics.

The school examined the outlook for developing and routes for improving the software of the mines' control staffs. Recommendations were adopted.

At Underground Mine No 8 Velikomostovskaya-Komsomolskaya (Western Ukraine Coal Production Association a school of advanced experience in high-speed tunneling of development workings with the 4PP-2 cutter-loader in S. G. Semenchuk's brigade was held. The tunnelers' collective, supervised by S. G. Semenchuk, in the first 5 months of 1987 drove 1,647 meters of workings (the plan was met 110 percent). The average monthly pace was 330 meters, and labor productivity per tunneleer was 4.5 meters. The mined mass goes from the cutter-loader to VG-2.5 mine cars through the PPL-1K reloader.

The creation of a specialized repair brigade under the mine's mechanical shop has helped to improve cutter-loading servicing. The brigade performs current repair twice weekly. Mean output time per cutterloader between failures has been increased to 270,000 tons, that is, time between overhauls has been tripled.

In order to improve operation of the 4PP-2 cutter-loader, rationalizers have made suggestions for increasing its operating reliability. After becoming familiar with the brigade's work organization, the school's participants adopted recommendations for increasing the pace of the excavating performed.

A republic school for studying the advanced experience of I. Yu. Rozov's brigade in the operation and technical servicing of the automated KD-80 cutter-loader at the Samarskaya Underground Mine was held at Pavlograd. The collective works at the 436th longwall, which is equipped with the KD-80. The KA-80 cutter loader, with remoted feed system and two operating implements, works under the shuttle system, as does the SPTs-151 conveyor, with drive heads remoted at the entry. The built-up entry is equipped with PTK reloader and 2L-80u ribbon conveyor.

Average daily mining exceeded 1,000 tons of coal where the seam's thickness is 0.85 meter, and the breakage-face line advances 120-130 meters per month. Average monthly labor productivity of the GROZ [breakage-face mineworker] was 416 tons or more. The brigade's collective has sustained the initiative: to fulfill the plan for the first two years of the five-year plan by the 70th anniversary of Great October. Mentorship has been developed in the brigade. The level of use of GShO [mine equipment] has been raised. The school's participants adopted recommendations.

A republic school for studying the advanced experience of work organization for the technical servicing and overhaul of mine equipment at the Underground Mine imeni Gerokosmosa was held in Pavlograd. Reports and communications were read, and methods of technical servicing and repair of equipment at the workplace were studied.

The mine was turned over for operation in March 1979 with a designed capacity of 1.5 million tons of coal per year. Six longwalls are in operation, of which five are equipped with Donbass longwall miners, one with the KM-103 longwall miner. The mine is completely conveyorized. The collective was awarded the challenge Red Banner of the UkrSSR Council of Ministers and Ukrsovprof [Ukrainian Trade-Union Council] and the title Enterprise of High Production Sophistication and Work Organization was conferred on it for high production indicators in 1986.

The school's participants made recommendations for further improving the technical servicing and repair of the mine-face equipment and for insuring a high level of efficiency of the equipment of the mining sections that have mechanized longwall miners. For example: allocate a repair and preparation shift (in the morning hours) for the technical servicing and current repair in accordance with a schedule; man the repair element with highly qualified workers; and observe strictly the requirements for equipment operation, for technical servicing, for PPR [planned preventive maintenance], and so on.

In May NPO Avtomatgormash [Science and Production Association for Automation of Mining Machinery] conducted an All-Union seminar, "Automation of Coal Cutter Loaders at Thin Seams." The seminar's participants heard reports and visited an exhibition and the laboratory of Donavtomatgormash [Donets Association for Automation of Mining Machinery].

The coal industry has accumulated experience in operating the equipment for automating cutter-loaders with remote feed system and planing equipment, a radio controlled Poisk-2r cutter-loader is being tested, and a RKU-10m cutter loader is being controlled by means of an infrared channel. Many mines have adequate experience in using K-103 and KA-80 cutter-loaders, have arranged for servicing automation equipment, and have fabricated stands for checking their components. Some deficiencies have been found while operating the equipment.

The seminar's participants made recommendations for increasing reliability, broadening the development of specialized technical servicing and automation-equipment overhaul, reducing the cost of startup and setting-up operations, and increasing the productivity of the mining equipment.

A comprehensive trip by specialists of coal machinebuilding plants to the Institute of General and Inorganic Chemistry of the UkrSSR Academy of Sciences for the study of new industrial processes for protecting mining equipment parts from corrosion was made. The travelers became acquainted with these processes: electrolytic coating with zinc, nickel and chromium, the aluminizing

and polishing of parts by the electrochemical and chemical methods, and so on. A special seminar was held, an exhibition was organized, and processes at workplaces were studied.

The following recommendations were developed: that the use of chemical and electrochemical polishing of parts be considered desirable at coal machinebuilding plants; that the cleaning of castings in ion melts be used; that cleaning and regeneration of processed chromium-containing electrolytes be used with a view to protecting the environment; and so on.

In June a trip to the Ukrzapadugol Association by a group of specialists was organized. A specialized section was established under the Chervonograd Geological Exploration Party of the Lvov-Volyn GRE [Geological Exploration Expedition], where a repair base for Strela-77 drilling machines was organized. Each year the underground mines and the geological exploration party conclude an agreement under which the amounts and priority of work on drilling vertical holes at a winze between seams are determined.

The advanced brigade of drilling master V. I. Lobashchuk, working at Underground Mine No 10 of Velikomostovskaya, drove 200 meters of workings in a month. Time for redeploying the machinery from one mine to another was 5 days. Technical servicing of the machinery in the mine is done by a brigade of highly qualified underground electrical mechanics made up of 4 people and supervised by the section's mechanical engineer. A brigade of three mechanics, one electrical mechanic, an electrical welder and a lathe operator are engaged in repair.

A stock of interchangeable basic components of the Strela (tool rotator, oil unit, electrical starting equipment, and so on) has been established. Components are replaced without sending the machine to the top. The section's collective operates under economic accountability. All the brigades have transferred to the brigade contract. The equipment is treated as socialist property.

A seminar for studying the experience in operating Strela-77 drilling machines was held at Donetsk in July. Ninety such machines are in operation at Ukrainian SSR underground mines. Series production of them was started by the Gorlovka Machinebuilding Plant imeni Kirov in 1981. Annual output is 40 units.

The greatest running time per machine (1,200 m per year) was achieved at mines that work gently sloping seams and steep seams (580-730 m). However, in some associations the running time per machine is still low, primarily because of unsatisfactory operation, repair and work organization thereof.

The seminar's participants adopted recommendations: that, in order to improve the operation of Strela-77 drilling machines, it is desirable to disseminate the

experience of the underground mines Toretskaya (Dzerzhinskugol [Dzerzhinsk Coal Production Association]), imeni Rumyantsev (Artemugol [Coal Production Association]), imeni Stakhanov (Krasnoarmeyskugol (Krasnoarmeysk Coal Production Association]), and Proletarskaya-Krutaya (Sovetskugol [Sovetsk Coal Production Association]), where the machines are being used effectively and repair and assembly and disassembly have been organized well. At steep seams, use parallel developmental working and have the preparatory excavations relative to the breakage face done ahead of time. Use the method of operating machines in groups (3-4 per mine). Organize specialized sections under geological exploration parties in accordance with the experience of the Chervonograd GRP [hydraulic seam-fracturing] unit of the Lvov-Volyn Geological Exploration Expedition of Ukruglegeologiya [Ukrainian Geological Association], and so on.

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## ELECTRIC POWER GENERATION

**Structure of Electric Power Nets Described**  
*18220012a Moscow ELEKTRICHESKIYE STANTSII*  
*in Russian No 9, Sep 87 pp 42-45*

[Article by engineer D.L. Faybisovich of Energosetproekt [All-Union State Planning, Surveying and Scientific Research Institute of Power Systems and Electric Power Networks] under the rubric "The Development of Electric-Power Networks": "The Structure of Electric Power Networks of Power Systems in the 11th Five-Year Plan"; UDC 621.311.13.004]

[Text] The electric-power networks of power systems were further developed in the 11th Five-Year Plan. The overall length of 110-kV [kilovolt]-and-up networks grew by 87,000 km [kilometers], and totaled about 560,000 km at the beginning of the 12th Five-Year Plan. The growth in step-down transformer substation capacity at these voltages was 126.8 GVA [gigavolt-amperes], while the total installed capacity of step-down transformer substations was about 734 GVA at the beginning of the 12th Five-Year Plan. (1)

Two voltage systems were developed in the country's electric-power grids: 110-220-500 kV and 110(150)-330-750 kV. The former system was more widespread, while the latter was employed in the Northwestern and Southern OESs [consolidated regional power systems] and partially in the Central, North Caucasus and Transcaucasus OESs.

The boundary line for the use of voltage systems is not fixed and a gradual spread of 330- and 750-kV systems to the east has occurred in recent years. While the eastern boundary of the spread of the 750-kV network was on

the Leningrad-Kalinin-Bryansk-Kursk line at the beginning of the 11th Five-Year Plan, by the end of this five-year plan this boundary, taking into account 750-kV transmission lines currently planned or under construction, will run along the Cherepovets-Vladimir-Tambov line, i.e. 250-300 km further east than the existing boundary, which is explained by the widespread utilization of this voltage to distribute the power of the Kalinin, Smolensk and Kursk AESs [nuclear electric power plants]. The tendency toward the spread of the 750-kV net in an easterly direction is increasing the active zone of this voltage and the number of 750- and 500-kV net junctures. At the beginning of the 12th Five-Year Plan the 750-330-kV system was providing for the distribution of power in systems whose load comprises about 32 percent of the overall load of the country's power systems.

There was 2.34 kVA [kilovolt-amperes] of transformer capacity (not taking into account reserve phases and house or regulating transformers) for every kW [kilowatt] of installed capacity of electric power plants on 110-kV-and-up power nets as of 1 Jan 86, including 1.18 kVA on 110(150)-kV, 0.84 on 220-330-kV and 0.32 on 500-kV-and-up lines. This indicator describes the quantitative transformation of power in the system nets. The continuous growth in the summary coefficient of transformation (1.45 in 1965, 2.02 in 1975 and 2.34 in 1985) points out the prevailing nature of the trend of assimilating new voltage steps in relation to the trend toward increases in deep lead-ins. The growth in the summary coefficient of transformation has negative consequences, since it leads to additional loads on the transformer plants, an increase in electric-power losses in the grid and the need to raise the extent of compensation for reactive power. (2)

*The 110-kV net was further developed in all power systems and in power centers of the country operating in isolation. The use of 150 kV was limited and it was utilized only in the Dnieper, Kola and parts of the Odessa power systems.*

The 110-kV net provides for the basic functions of distributing electric power in power systems and is widely used for the external power supply of the principal group of consumers of industry, rail and pipeline transport, rural electrification facilities and cities.

The overall length of 110(150)-kV overhead lines in single-link terms was 375,100 km on 1 Jan 86, while the growth over the 11th Five-Year Plan was 51,900 km. The level of average annual start-up of 10,000-11,000 km has been stable in recent years. The highest rates of 110-kV line construction in the 11th Five-Year Plan were in the power systems of the Urals, Center, Siberia and Central Asia, where along with the embracing of new regions with electric-power nets, a great deal of purposeful 110-kV net construction was done to supply power for oil-and-gas transport and production facilities, the

external supply of electrified stretches of railroads, irrigation facilities and others. The Elektroenergetika [Electric Power Engineering] sector had about 74 percent of the overall start-up of 110-kV lines.

About 26 percent of the total length of the 110-kV lines was put up on two-line towers. Over the 11th Five-Year Plan, this relative magnitude declined somewhat, since the principal amount of 110-kV line construction, notwithstanding the preferential construction of double lines in cities and industrially developed centers, fell to rural locales where chiefly single-circuit lines are built. The decline in the share of double-circuit lines was also determined by the requirements of standards for the preferential use of single-circuit lines to supply consumers in the oil-and-gas complex.

The average length of a 110-kV line practically did not change over the 11th Five-Year Plan and was about 30 km in 1985. This indicator was determined according to the overall length of a line running to a single power-supply center with 110-kV switchgear of electric-power

%

Voltage combination

Capacity,  
Quantity,

	110/35-25/NN	110/NN
Capacity,	52.7/48.0	47.3/52.0
Quantity,	54.1/48.0	45.9/52.0

Note. Numerator—1975, denominator 1985.

The reduction in the use of 35-kV nets to supply industrial consumers and electrified stretches of railroads in power-supply systems of major cities and rural consumers had an effect on the drop in the share of utilization of triple-wound transformers.

Growth in the absolute and relative capacities of deep lead-in substations with secondary voltages of 10 kV continued in the 11th Five-Year Plan, which testifies to the higher rates of development of 10-kV nets compared to 6-kV ones. Whereas in 1978 substation capacity with combined 110/10-kV voltages comprised some 21.2 percent of total installed capacity of 110-kV transformers, it had grown to 29 percent in 1985. At the same time, a study of the development of the 110-kV network showed that the unfounded development of the 6-kV network and, as a consequence, the use of deep lead-in substations with combined 100/6-kV voltages is a quite frequent phenomenon primarily in urban nets.

About 62 percent of all 110-kV substations had two transformers at the beginning of the 12th Five-Year Plan, while 35 percent of all 110-kV substations were operating with one transformer. The average installed capacity of 100-kV substations across the country was 29 MVA, varying from 36 in the Southern consolidated regional power system to 15.7 in the Kazakhstan one.

plants and a 110-kV substation, as well as substations with higher voltages that have 110-kV switchgear. The stable nature of the average length is determined by the combined action of a number of factors of an opposing nature. The average line length thus decreases with the increase in line density, while the construction of long lines and second circuits to substations for the purpose of raising the reliability of consumer power supply increases it.

The weighted average cross-section of 110-kV wires did not change significantly over the 11th Five-Year Plan, and about 76 percent of total line length was in wire cross-sections of 120-185 square mm [millimeters].

The installed capacity of 110-kV transformer substations was 370 GVA at the beginning of the 12th Five-Year Plan, and some 49.6 GVA were put into service over the 11th Five-Year Plan.

The correlation of installed capacity and the number of 110-kV transformers with different combinations of nominal voltages is given below.

	110/35-25/NN	110/NN
Capacity,	52.7/48.0	47.3/52.0
Quantity,	54.1/48.0	45.9/52.0

The 220-kV electrical net was extended in the majority of the country's OESs. The Southern, Northwestern and part of the North Caucasus OESs, where 330-kV networks are being developed, are exceptions. The basic purpose of the 220-kV networks is to supply major centers with 35-110 kV, the output of electric-power plant capacity, power supply for enterprises in the electricity-intensive sectors of industry, electrified stretches of railroads etc. In a number of power systems in the grid, the 220-kV nets carry out system-forming functions.

The overall length of 220-kV lines at the beginning of the 12th Five-Year Plan in single-line terms was 115,800 km, and some 19,700 km were put into service over 1981-1985. It should be noted that the start-up of 220-kV lines at a level of 4,000 km a year has been quite stable for the last 10 years. The 220-kV lines were built at the highest rates in the 1980s in the Far East (the electrification of the BAM and the Transsiberian Mainline), Urals (the oil-and-gas complex of the Tyumen Power System) and Central Volga (the pipeline transport of oil and gas) OESs. These power associations got about 40 percent of the overall 220-kV line start-ups in the 11th Five-Year Plan.

The proportion of double-circuit 220-kV lines comprises about 17 percent of the total length of 220-kV lines.

During the 11th Five-Year Plan, the start-up of double-circuit lines comprised 25-30 percent of total 220-kV line construction for certain power systems. The trend toward growth in double-circuit lines is steady and is defined by the ever growing distributive functions of the 220-kV nets.

The average length of a 220-kV line grew somewhat over the five-year plan: it was 96 km in 1980 and 105 km in 1985. This was defined by the building of long 220-kV lines such as the Mikun-Koryazhma of 217 km, the Tynda-Ust-Nyuzhka of 300 km, the Urgal-Dzhamku of 194 km and others along with shorter ones.

The weighted average cross-section of 220-kV wires has declined from 366 to 349 square mm over the last two five-year plans. The breakdown of wires by cross-sections at the beginning of the 12th Five-Year Plan was as follows: 240 and 300 square mm—60 percent of total line length, 400 square mm—28 percent, 500 square

%

Voltage combination	220/110/NN	220/35-27/NN	220/NN
Capacity,	88/83.8	6.3/6.9	5.7/9.3
Quantity,	77.5/69	17.7/21.2	4.8/9.8

Note. Numerator—1980, denominator 1985.

The principal capacity start-up was 220/110-kV ATs (90 percent of the total) over the 11th Five-Year Plan. The installation of ATs with 220/110-kV voltage combinations was most typical of rayon substations providing power for load centers of the 110-kV net. The prevailing use of transformers with combined 220/35-27/NN [low-voltage] voltages is associated with strengthening the power supply for the 35-kV net in rural areas and the

%

Nominal capacity of 220-kV transformers, MVA	Capacity	Quantity
20-32	3.3/3.4	13.9/13.7
40-63	16.4/17.6	32.4/33.6
90-125	38.8/40.0	32.8/33.4
140-200	29.5/27.8	15.8/14.6
240 and up	12.0/11.2	5.1/4.7

Note. Numerator—1980, denominator 1985.

The start-up of small-capacity transformers (up to 63 MVA) increased over the 11th Five-Year Plan, which is connected first and foremost with the implementation of a broad program of electrification of railroads in the Far East, Kazakhstan and Siberia. This defined the stabilization of the "average"-capacity transformer—103 (1980) and 102 MVA in 1985. At the beginning of 1986, the average substation capacity was 197 MVA, while the number of transformers installed at substations was 1.9.

mm—9 percent and others—3 percent. Over the 11th Five-Year Plan, over 90 percent of new lines were broken down into 240 and 300 square mm.

The installed capacity of 220-kV transformer substations at the beginning of the 12th Five-Year Plan was 191.4 GVA, including 34.9 GVA put into service in 1980-1985. It should be noted that a portion of the 220-kV transformer inventory was installed at 500- and 330-kV substations, and the total capacity of these transformers was 16.1 GVA at the beginning of 1986. Out of the capacity put into service over the 11th Five-Year Plan at 149 new substations, 16 GVA (45 percent) were 220-kV, along with 19 GVA (55 percent) at existing ones.

Comparative data on the number and capacity of the transformers and autotransformers (AT) in various combinations of nominal voltages are given below.

external power supply for railroads in their electrification with alternating current. The quantitative growth in the use of 220/NN transformers, whose principal purpose is associated with supplying electricity-intensive industrial enterprises, electric-drive compressor stations, trunk gas pipelines and the implementation of deep lead-ins in urban electric nets.

Comparative data on the use of unit capacity of 220-kV transformers is characterized by the following data.

The relative magnitude of single-transformer substations declined from 28 (1980) to 21 percent in 1985.

The 330-kV net was developed in the Northwestern and Southern OESs, as well as partially in the Central, North Caucasus and Transcaucasus OESs at the junction of the two voltage systems. The 330-kV nets perform basically a system-forming function, while intersystemic functions

of the 330-kV system are declining with the development of the 750-kV net. Another purpose of the 330-kV net is to supply power for major 110-kV load centers and the output of electric-power plant capacity, as well as electric-power supply for major industrial enterprises and compressor stations of trunk gas pipelines.

The overall length of the 330-kV lines was 27,400 km on 1 Jan 86, and 3,600 km were put into service over the 11th Five-Year Plan. The 330-kV net was built at the most rapid rate during this period in the Northwest OES to distribute the power of the Ignalinsk, Smolensk and Kola AESs.

The structure of the wire cross-section of the 330-kV net is defined by the primary use of the phase 2 x 300 square mm wire (52.9 percent of the overall length) and 2 x 400

%

Voltage combination	330/110/NN	350/150/NN	330/220/NN
Capacity,	55.9/64.0	18.9/20.0	25.2/16.0
Quantity,	65.3/72.0	14.9/16.2	19.8/11.8

Note. Numerator—1980, denominator 1985.

The relative magnitude of 330/220/NN ATs that were junctures for the two voltage systems declined over the 11th Five-Year Plan, which should be considered a favorable phenomenon.

%

AT unit capacity, MVA

125(120)
200
240-250
400

Note. Numerator—1980, denominator 1985.

The average capacity of 330-kV ATs remained practically unchanged over the 11th Five-Year Plan and totaled 191 GVA.

The relative magnitude of substations with one AT declined from 24 to 17 percent over 1980-1985, while for those with two it grew to 59 percent and for those with three or more, it declined to 24 percent. The decline in the number of single-transformer substations testifies to a rise in the reliability of the operation of 100- and 150-kV power net centers. The high proportion of substations with three or more ATs is determined by the absence of a three-phase 330/110-kV AT with a capacity of 400 MVA, as well as the favorable technical and economic indicators of a substation with 4 x 200 MVA ATs. The average number of ATs and substations was 2.2 in 1985.

square mm (32.2 percent). The weighted average cross-section was 689 square mm in 1985.

The average length of a 330-kV line grew somewhat over the 11th Five-Year Plan (133 km in 1980 and 138 in 1985). The growth in average line length was determined by the building of long lines during this period (Ignalinsk AES-Molodechno, 195 km, and others).

The transformer capacity of 330-kV substations installed totaled 73.0 GVA on 1 Jan 86, including the placement of 12.2 GVA into service over the 11th Five-Year Plan at new (25) and existing substations. 2.0 GVA of 330-kV transformer capacity was installed in 750-kV substations.

The ratio of 330-kV AT indicators compared to nominal voltages for 1980 and 1985 is cited below.

Voltage combination	330/110/NN	350/150/NN	330/220/NN
Capacity,	55.9/64.0	18.9/20.0	25.2/16.0
Quantity,	65.3/72.0	14.9/16.2	19.8/11.8

About 84 percent of installed 330-kV AT capacity feeds 110-150-kV grid centers.

Data on the utilization of 330-kV AT unit capacity are cited below.

AT unit capacity, MVA	Capacity,	Quantity,
125(120)	21.5/20.8	33.0/31.9
200	36.8/41.4	35.2/39.6
240-250	38.4/34.0	30.2/26.7
400	3.3/3.8	1.6/1.8

The average capacity of a 330-kV substation increased insignificantly over the 11th Five-Year Plan—from 411 to 422 MVA. The installed capacity of an “average” substation in the Southern OES is materially greater and comprises 470 MVA. This is determined by the power-intensive nature of a large group of consumers in this region, first and foremost the metallurgical enterprises of the southern Ukraine.

The 500-kV net was greatly developed in all of the OESs of the country and limited somewhat in the Southern and Northwestern OESs, where the 750-kV net was primarily developed. The principal purpose of the 500-kV net is system-forming and inter-systemic functions, as well as distributing the capacity of the major electric-power plants. Along with this, the distributive functions of 500-kV nets began to be manifested in a number of OESs where they have operated for a long time, where

the 500-kV lines and substations supply the external power supply for certain major industrial consumers.

The 400-kV electric-power nets are employed in extremely limited fashion in the Northwestern and Southern OESs for junctions with the grids of the CEMA members countries and Finland.

The total length of 500-kV lines was 35,100 km on 1 Jan 86, and 9,800 km were placed in service over the 11th Five-Year Plan, which is substantially higher than in the preceding five years. The 500-kV lines were built at the fastest rates in the Urals, Central and Siberian OESs, to whose share fell about 60 percent of the total. The total length of 400-kV lines was practically unchanged over the 11th Five-Year Plan and comprises 637 km as before.

The pattern of wire cross-sections for 500-kV lines at the beginning of the 12th Five-Year Plan testifies to the preferred use of phase 3 x 330(300) square mm wire, which is about 47 of the total length, while 3 x 500 square mm is 26 percent, 3 x 400 square mm is 23 percent etc. It could be noted that the principal volume of construction over the 11th Five-Year Plan fell to the share of lines with a phase cross-section of 3 x 330(300) square mm. The latter defined the reduction in the weighted

%

Voltage combination	500/110/NN
Capacity,	15.4/13.9
Quantity,	25.3/25.2

Note. Numerator—1980, denominator 1985.

Growth in AT use combined with 500/220 kV and the corresponding decline in the relative magnitude of the use of 500/110-kV ATs is leading to a decline in grid economic indicators due to the increase in installable

%

AT unit capacity, MVA
250-270
300-400
501
750-801

Note. Numerator—1980, denominator 1985.

The average (group) 500-kV AT capacity grew somewhat over the 11th Five-Year Plan and was 477 MVA in 1985.

The large number of new substations built during the 11th Five-Year Plan has increased the number of single-transformer substations (32 percent). Some 50 percent of

average phase cross-section for the whole aggregate of 500-kV lines, which is a characteristic trend of the last 15-20 years (1,488 square mm in 1968, 1,221 in 1980 and 1,160 in 1985).

The average length of a 500-kV line has remained practically unchanged in recent years and is at the level of 260 km. The stability of this indicator, notwithstanding the growth in the number of electric-power plant substations and amount of switchgear, was defined by the construction of a series of long 500-kV lines over this period, including the Demyanskaya-Tyumen (415 km), the Ekibastuz-Omsk (368 km), Maryyskaya GRES [state regional electric power plant]-Karakul (369 km), Kostroma GRES-Kirov (515 km) and others.

The installed capacity of 500-kV substations was 78 GVA\* on 1 Jan 86, including 23.1 GVA of transformer capacity put into service over the 11th Five-Year Plan. Some 25 new substations with a total AT capacity of 13.4 GVA were built over this period, while 9.7 GVA were installed at existing substations. The overall capacity of 400-kV ATs did not change and comprises 1.4 GVA.

The 500-kV substations were built at the fastest rate in the Urals and Central OESs, which had about 50 percent of the overall AT start-up capacity in the country.

The change in the structure of installed AT capacity according to combinations of nominal voltages for the 11th Five-Year Plan is cited below.

	500/220/NN	500/330/NN
Capacity,	82.8/84.8	1.8/1.3
Quantity,	73.0/73.6	1.7/1.2

transformer capacity at 220 kV and growth in electricity losses in additional transformation.

Data on the utilization of 500-kV AT unit capacity are cited below.

Capacity,	Quantity,
14.3/11.7	26.0/22.1
6.8/4.8	8.4/6.1
55.9/61.2	52.1/58.3
23.0/22.3	13.5/13.5

substations are equipped with two ATs, while 18 percent have three or more ATs. The average capacity of 500-kV substations grew insignificantly over the 11th Five-Year Plan—from 910 to 915 MVA. It could also be noted that the average capacity of 500-kV substations differed materially in individual regions. It was 584 and 626

MVA in the Kazakhstan and Far East OESs respectively, while at the same time it is considerably higher in OESs where the development of the 500-kV grid has gone on for a long time (1,137 MVA in the Siberian OES and 975 MVA in the Urals OES).

The 750-kV nets were developed in the Southern and Northwestern OESs and to a limited extent in the Central OES. They are used as system-forming for the distribution of the capacity of large AESs and to link the USSR YeES [Unified Power System] with the power systems of the CEMA member countries.

The overall length of 750-kV lines was 4,350 km on 1 Jan 86, including 1,490 km put into service over the 11th Five-Year Plan. The principal start-up of 750-kV lines was in the Southern OES (60 percent), where nets were built to distribute the capacity of the Chernobyl and South Ukraine AESs, and in the Central OES (40 percent), for the distribution of the capacity of the Smolensk and Kursk AESs.

The construction of 750-kV lines has been carried out recently using 5 x 400 and 4 x 500 square mm phases.

%

Group unit capacity, MVA

Capacity  
Quantity,

The following data characterize the number of 750-kV AT substations installed as of the beginning of the 12th Five-Year Plan: three substations with one AT, three with two and two with three. The average number of installed ATs at 750-kV substations is 1.9, and the average substation capacity is about 2 GVA.

Footnote

\*—Here and further without regard for reserve phases.

This has defined the growth in average weighted cross-section, which grew from 1,570 to 1,730 square mm over the 11th Five-Year Plan.

The construction of short 750-kV lines in the 11th Five-Year Plan (Smolensk AES-Bryansk at 131 km, Kursk AES-Metallurgicheskaya at 189 km and others) caused the drop in average length from 260 to 207 km.

The installed capacity of the eight existing 750-kV substations was 16 GVA on 1 Jan 86, and substation capacity grew by 3 GVA over the 11th Five-Year Plan.

The structure of installed 750-kV AT capacity combined with the nominal voltages shows that 750/330-kV ATs are 69 percent of installed capacity, and the remaining ATs have nominal voltages of 750/500 kV.

The junction of nets of the two voltage systems operating in the country is accomplished with the aid of 750/500-kV ATs.

Data on the utilization of AT unit capacity at 750-kV substations as of 1 Jan 86 are as follows.

3x333	3x417
69	31
73.3	26.7

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## LABOR

### Goskomtrud Wage Department Chief Evaluates Pay System

18280007 Moscow EKONOMICHESKAYA GAZETA in Russian No 43, Oct 87 p 9

[Article by B. Shcherbakov, chief of the Wage Department of Goskomtrud [State Committee for Labor and Social Problems] and candidate of economic sciences: "Improving the Wage System"]

[Text] *The wage system is a kind of "drive belt," with the aid of which the action of the economic levers is transferred to each individual worker. When this system slips, such phenomena arise as the underestimation of cost-accounting, wage-leveling and the distortion of the principles of social justice.*

#### Without Wage-Leveling

A properly organized wage system can facilitate a significant increase in labor productivity and the efficiency of public production. It is precisely at such a transformation of it that the decree of the CPSU Central Committee, the USSR Council of Ministers and the AUCCTU on improving the wages of the production sectors' workers based on the introduction of new wage rates and salaries is aimed.

The main goal is the establishment of the condition that wages everywhere would depend on the quantity and quality of labor. And this means that it is necessary to improve the monitoring of the extent of labor and the extent of consumption and to eliminate wage-leveling in all of its manifestations. While this work is being carried out, it is necessary to solve a number of the most important problems.

First, it is necessary to enhance the role of stable economic standards in the formation of the wage funds and to establish a direct relationship between the size of the wage funds and the final results of the collectives' activities.

Second, wage improvement should proceed on the basis of and within the limits of the funds earned by a collective through an increase in production efficiency and the proper use of the wage funds.

Third, there must be a significant enhancement of the collectives' role in the establishment of a system for materially and morally stimulating an increase in labor's final results and operating with a smaller number of personnel.

Fourth, It is necessary to establish scientifically sound correlations in wages between the workers of the various professional, skilled and social groups. There must be

establishment of wage advantages for those responsible for accelerating the rate of scientific and technical progress and strengthening the country's economic system.

These problems must be solved based on a restructuring of the wage rate system, on an increase in the quality of the labor standards setting, on the introduction of progressive wage and bonus payment structures and on reinforcement of the connection between supplementary payments and raises and specific labor achievements. The contemplated measures should be organically connected with the introduction of new management and administration methods.

We are talking about a qualitative change in the forms and methods of state regulation of wages and a change in the interrelation between enterprises and the state. Previously, state organs took upon themselves the functions of regulating individual wages. The USSR Goskomtrud [State Committee for Labor and Social Problems] and the ministries and departments compiled an enormous number of standard positions regarding the payment of bonuses, raises and supplementary payments... The enterprises' role frequently came down merely to fitting a specific person or the work performed by him to standard decisions and determining whether or not it was permissible here to make an additional award and on what scale.

**Under current conditions, instead of exercising supervision down to the minutest detail, the state merely works out the rules for "earning" funds.** For the first time we should carry out such a large-scale reform without allocation of additional funds from the state budget. The traditional prior allocation of money from the state budget for the introduction of new wage rates facilitated the development of the wage-leveling process: wages were raised in equal measure for both good and bad workers. As experience shows, this path does not lead to an increase in production efficiency. A collective should earn funds independently.

At the same time, enterprises should also handle their own funds independently, determine themselves the forms and systems for wages, the indices, conditions and scale of bonus payments and the circle of those awarded bonuses, the scale of the various types of supplements and raises and decide themselves who should get them.

A new principle in wages is the transition from the wage-leveling process in the determination of earnings to its differentiation in relation to the final labor results.

In essence, wages up till now have been paid for the process of working, but it is necessary that the criterion for earnings be the result and quality of the work. The collective contract in labor brigades, in sections, in shops and on farms, by the end of the 5-year plan, should become the basic form for organization and wages.

**Wage Rates For Pieceworkers Under Normal Working Conditions In Machine Building (Rubles Per Month)**

Categories	1	2	3	4	5	6	7	8
Wage rates for pieceworkers of all trades (including toolmakers) effective up to 1986.	77.5	84.3	93.2	103.1	116.1	132.8	—	—
New wage rates for pieceworkers:								
—toolmakers	112.5	121.2	135.0	152.3	173.1	202.5	112.9	226.8
—machine operators and repairmen	105.6	114.2	126.4	141.9	162.7	188.7	—	—
—all other trades	93.5	102.1	112.5	126.4	143.7	167.9	—	—

**Salaries Of Foremen And Engineers Of Machine Building Enterprises (Rubles Per Month)**

	Previously Effective Rates	New Rates
Foreman, 1st Group	140-155	180-220
Chief Engineer	—	190-230
Engineer, 1st Class	—	180-220
Engineer, 2d Class	—	160-200
Senior Engineer	145-165	—
Engineer	115-150	140-180

**The Collective Evaluates**

The wages of a specific person should also be derived in relation to labor results. Therefore, the material incentive of the managers of enterprises by 75 percent will depend on the collective's fulfillment of its own contractual obligations, inasmuch as the fulfillment of deliveries becomes the basic evaluation of the enterprise's work.

The workers will be paid bonuses for fulfillment not of the output norms but rather of set tasks based on the plan for the shop or the section. The latter point is of exceptionally important significance: it ensures strict and reliable communication along the entire planning chain: from enterprise to shop to section to team to individual work site. At the same time, this precludes the payment of bonuses when plans are not fulfilled, which, unfortunately, for now is still prevalent everywhere.

In contrast to the procedure previously in effect, bonuses now are paid to the collective as a whole and each worker is recommended for a bonus payment individually. The size of the individual bonus is not limited. Therefore, its stimulating capabilities increase sharply. The wage fund earned by the collective and the material incentive fund are not withdrawn, but rather remain at its disposal for

stimulation. Understandably, its effectiveness is directly connected with the adherence to principle of attitudes within the collective, the improvement of the mechanism for determining each person's labor contribution and the collective's ability to manage its own funds wisely. Although, dividing up the money equally is, of course, much easier than carefully evaluating the work of each member of the collective. But this basically contradicts the principle of social justice.

Finally, perhaps, an actual mechanism is being established for increasing material responsibility for the poor quality of work. When the work indices deteriorate, not only will bonuses, supplementary payments and raises be lost, but perhaps the worker's category classification will be reduced and the specialist's skill category, along with the wage rates, to the minimum level, and, if need be, the person might be fired. For the first time, provision has also been made that, when an enterprise's production indices deteriorate, its managers can have their wage group reduced.

In the new system, the question of association of wages with actual labor conditions has been resolved. In the majority of sectors, the enterprises have now obtained the right to differentiate wages independently in relation to the actual concentration of load factors and unhealthy labor conditions at the work site. In order to compensate for the unfavorable working conditions, instead of increased wage rates, supplementary payments of up to 24 percent are being introduced. The specific sizes of the supplementary payments are

determined by the enterprises independently based on the certification of the work sites. It is particularly necessary to pay attention to the fact that, for the first time, compensation is associated neither with the worker's trades nor with a specific person, but rather with the labor conditions at the work site. Those who work at this site receive the compensation.

In machine building and light industry, based on the experience of ZIL [Motor Vehicle Plant imeni I.A. Likhachev] and GAZ [Gorkiy Motor Vehicle Plant], it is permissible to employ supplementary payments—of up to 12 percent of the wage rates—for increased labor intensiveness, i.e., being busier on the conveyers, flow lines and automatic line. The specific sizes of the indicated supplementary payments are set also in accordance with the results of the certification of the work sites.

#### An Engineer's Pay

Qualitative changes are being introduced into the wages of engineering and technical personnel and office workers. What are the principal points here?

On the whole, the salaries of engineering and technical personnel are increasing more than the wage rates for line workers—this is one of the means for enhancing the prestige of engineering work. Advantages are being received by the specialists who determine scientific and technical progress: the line supervisors (foremen and section and shop chiefs), designers and manufacturing engineers who set up the production at the enterprise, the quality control section, and representatives of some other trades.

The practice of setting up categories for the designers and manufacturing engineers and classifying the foremen has proven its value. Therefore, now categories are being introduced for engineers of all specialities, economists and technicians. For example, instead of two positions—engineer and senior engineer—a scale is being introduced: unclassified specialist, first and second class and chief specialist. For designers, manufacturing engineers and time-studies engineers, an additional third classification is being introduced. The range between the maximum and minimum salary sizes is being increased significantly. Now the salary "bracket", as a rule, amounts to 40-50 rubles. Thus, whereas, before the introduction of the new salary conditions, an engineer at a machine building enterprise, with a particularly complex production set-up, could count on getting 115-150 rubles, now his salary (even if he is in the unclassified category) can amount to 140-190 rubles.

A designer or manufacturing engineer who receives a classification can get a salary of up to 260 rubles and an engineer of another specialty or an economist—up to 240 rubles. In addition, it is permissible to increase the salaries by up to one-half the basic rate for outstanding achievements in labor or for performing the most important and responsible jobs.

At the same time, there must be significant reinforcement of the departments engaged in the promotion of the human factor in production. Introduced into the wage charts in all sectors have been the professions of organizational and time-studies engineers, sociologists, psychologists and physiologists. Labor sociology and psychophysiology, social development, subsidiary farming

and output and labor quality assurance departments have been established where they did not exist before (construction, transportation and the extractive sectors). The salaries of specialists of such traditionally overlooked departments as personnel, legal and accounting are being raised significantly. It must be noted in particular that the salaries of technicians are being significantly increased.

Consequently, the number of people desiring to occupy these positions will be larger.

#### What The First Results Have Shown

What has the first experiment in the transition to the new wage conditions shown? On the whole, the direction has been correctly determined. When a collective is certain that all earned assets will remain at its disposal, then the search for resources proceeds more energetically.

Impressive indices have been achieved by the Nizhnevolzhskneft [Nizhnevolyzhsk oil production] Association. As is well known, petroleum output in recent years has been proceeding under unfavorable extraction and geological conditions. In this circumstance, labor productivity for the first half of 1987 increased within the association by 18.2 percent, above-plan profits of 4.9 million rubles were received, 66,000 metric tons of oil were extracted in addition to the planned amount, along with 165.5 million cubic meters of gas, and 7,500 meters of wells have been drilled.

The new wage mechanism consists of interrelated elements, from which, like in Rubic's cube, it is possible to make up any kind of color range. For example, in machine building, in the new wage system it is possible to make up more than 90 wage variations. Hence, it is particularly important that the enterprises be able to do this themselves.

Enterprises which have converted to the new wage conditions have found nearly 30 percent more assets due to the acceleration of scientific and technical progress. Thus, in the Belorussian railroad system, the rate of introduction of new equipment and technology and of efficiency experts' proposals and inventive ideas during the transition to the new wage rates increased by a factor of 3.

There has been a noticeable acceleration in the introduction of progressive administrative structures. For years, we have studied the "improvement" and resolute reduction of administrative staff. However, its personnel size not only did not decrease, but rather increased. For years, we convinced one another of the efficiency of concentrating specialized jobs, but, unfortunately, did very little on the practical implementation of this matter. Now the labor collectives are finding additional assets of from 15 to 20 percent due to the improvement of the administrative structure and the elimination of petty

and inefficient subdivisions. For example, in the Grodno motor transport association, due to the centralization of a number of functions and the improvement of the administrative structure, nearly 25 percent of the necessary assets were obtained.

At the same time, the USSR Goskomtrud is receiving letters from workers, in which facts are listed about managers' or office workers' salaries were raised due to unfounded "cuttings" of cost estimates and the setting of unfounded standards for workers. Our checks have indicated that at nearly a third of the enterprises, no provision for the improvement of the administrative structure has been included in the make-up of measures on preparation for the introduction of the new wage conditions. In a number of instances, they are confined to the reduction of vacancies and the transfer of one or two workers.

Earning funds for the new wage conditions is not so simple. This matter is very tedious, complex and relatively prolonged. It can not and should not be of a one-time nature. Therefore, the new wage rates and salaries may be introduced only according to the degree of accumulation of the necessary funds—either one time for the entire collective or gradually, according to the individual structural subdivisions and worker classifications. In all instances, however, a wage increase for the workers of the plant management staff and the managers should be implemented after the transition to the new wage conditions for workers of all the other structural subdivisions.

There is still one more indispensable condition: in all instance, there should be assurance of a surpassing increase in labor productivity in comparison with the growth of average wages. Taking this into account, the time frames and sequence for wage and salary increase are determined. As we are seeing, wage reform makes it possible to link the measures on improving administration, taken from above, with the development of the internal production management mechanism and thereby bring the day's requirements to each worker and to each work site.

[signed] V. Shcherbakov, chief of the Wage Department of the USSR Goskomtrud and candidate of economic sciences.

**Editor's note.** The following materials, published in EKONOMICHESKAYA GAZETA in 1987, are devoted to the principles of wage restructuring and the practice of their application: Yu. Ustukachkintsev, A. Gromov "So That Wages Are According to Labor" (No 3, p 19); V. Turin, A. Markosyan "The Economic Bases of Social Justice" (No 4, p 16); N. Kozlov "An Honest Ruble—From Honest Labor" (No 9, p 16); A. Pyatkova "At a Frozen Source" (No 16, p 16); N. Krupenin "From Orders—To Stimuli" (No 32, p 14); B. Gavrilov "Wage Reform" (No 34, p 6).

### Results of New Bonus System Reported

18280017 Moscow SOTSIALISTICHESKIY TRUD in Russian No 10, Oct 87 pp 29-35

[Article by K. Paskevich, deputy chief, Machine-Building and Metal-Processing Department, USSR Goskomtrud [State Committee for Labor and Social Problems], candidate of technical sciences, and A. Konovalov, sector chief, candidate of economic sciences: "Increasing the Stimulating Role Played by Bonuses"]

[Text] Along with increasing the wage rates and salaries of employees in the production sectors of the national economy by means of the enterprises' funds, the decree of the CPSU Central Committee, USSR Council of Ministers, and the AUCCTU dated 17 September 1986 beginning in January of the present year introduced a new system for awarding bonuses to workers, managers, specialists, and office personnel. Enterprises have been granted wide-ranging opportunities to strengthen the stimulating role played by bonuses in fulfilling plans and contractual obligations with regard to product deliveries, upgrading the technical level and quality of products (or operations), decreasing labor productivity, reducing production costs, economizing on all types of material resources, and ensuring the direct link between bonuses and the results of each employee's labor.

An enterprise has the right to independently develop and approve regulations on awarding bonuses to employees for the basic results of economic activities in accordance with the following groups: workers, designers, technologists, and scientific staff members; employees of the technical-control services; other managers, specialists and office personnel, proceeding from the specific conditions and problems of the subdivisions in setting up an integrated material-incentives fund, as well as to determine the dimensions, procedures, and time periods for paying out special bonuses.

Refinements have been introduced in the sizes of the bonuses to be awarded. For workers and collectives in brigades the size of bonuses to be paid out of the wage fund cannot exceed 40 percent of the piece-rate earnings (wage rate) as compiled on a monthly basis. Bonuses to be paid out of the material-incentives fund are not limited by any maximum amounts.

For the management staffs at associations, enterprises, and organizations the maximum bonus amounts are as follows:

for a 100-percent production output in accordance with the contracts (including those for exports) and for achieving the basic indicators of production efficiency—0.75 times the monthly salary;

with regard to special systems of awarding bonuses (for carrying out assignments re accelerating scientific and technical progress, exporting products, putting production capacities and construction projects into operation, producing consumer goods, rendering paid services to the population, etc.)—2.6 times the monthly salary per annum.

Bonuses re the results of all-union and republic-level socialist competitions can go as high as 1.4 times the monthly salary per annum above the amounts mentioned above.

However, in computing the bonus amount for a collective as a whole, the bonuses for specialists and office personnel are determined in accordance with their individual labor contribution to the overall results, and there are no limitations placed on the maximum amounts. Bonuses for economizing on specific types of material resources are also paid out in excess of the established amounts.

In accordance with the new system of awarding bonuses, the USSR ministries and departments, as well as those at the union-republic level, annually approve on their own the indicators, amounts, and time periods for awarding bonuses to management staff personnel at associations, enterprises, and organizations.

Demands on clumsy, wasteful workers are being tightened up. In this connection, it has been provided that bonuses not be awarded to collectives and individual employees who are guilty of lowering the quality of the products (or work) being turned out, violating technical discipline, standards or engineering specifications, advertising or returning poor-quality products, and other production lapses.

Introduction of the new system of awarding bonuses is particularly urgent under the conditions of strengthening the economic management methods, of converting enterprises to self-support and self-financing. Its introduction is directed at activating the human factor, at increasing the labor and creative yield of employees, and at linking their interests with the interests of collectives and society as a whole. The need to solve this problem was once again emphasized by the June (1987) Plenum of the CPSU Central Committee. It was noted there that under the conditions of restructuring the problem of harmonizing public and individual interests has re-emerged. The search for correct correlations between the former and the latter is enormously important; this is a task for vital, practical work. In the final analysis, the meaning of restructuring also consists of taking these interests into account, influencing the interests, managing them, and operating through them.

The sectors' top brass were called upon to provide effective leadership over the process of improving the practical incentives for enterprise employees as applied to the requirements of management methods and the

radical reform of running the economy, as well as to overcome the administrative-command modus operandi. It required a timely summarization and dissemination of programming experience in awarding bonuses, that it be aimed at solving high-priority problems, increasing the motivation and responsibility of employees and labor collectives for achieving high end results.

It was all the more important to carry out this work inasmuch as considerable sums are being spent at individual enterprises on the needs of awarding bonuses. Bonus payments amount to approximately one-fifth of the average employee's wage, but when calculated on an annual basis, for example, for enterprises under the USSR Ministry of the Electrical Equipment Industry and the USSR Ministry of Tractor and Agricultural Machine Building, approximately 0.5 billion rubles are spent for this purpose, 0.8 billion rubles are spent for the USSR Ministry of the Automotive Industry, while 3.5 billion rubles are spent for the machine-building complex as a whole.

In line with the fact that association and enterprise managers have been granted the right to independently develop and approve the regulations, indicators, and conditions for awarding bonuses, the basic and all standardized regulations on awarding bonuses have been abolished. (The recommendations of the NII [Scientific Research Institute] of Labor with regard to organizing the awarding of bonuses were published in the journal *Sotsialisticheskij trud*, No 3.). It is understandable that under these conditions the role played by enterprises and the genuine influence of the ministries have increased significantly. A great deal has been accomplished in the USSR Ministry of the Electrical Equipment Industry, the Ministry of the Coal Industry, Ministry of Ferrous Metallurgy, Ministry of the Petroleum Industry, and the Ministry of Railways. Here they have not only introduced new indicators, conditions, and amounts of awarding bonuses to the subdepartmental enterprises in good time, but they have also actually created the economic prerequisites for fully implementing the new principles of providing incentives.

However, as noted at the conference in the USSR Goskomtrud [State Committee for Labor and Social Problems], there have been delays in approving the new indicators, conditions, and amounts of awarding bonuses to management personnel in the USSR Gosagroprom [State Agroindustrial Committee], Ministry of the Timber, Pulp and Paper, and Wood-Processing Industry, Ministry of the Petroleum Refining and Petrochemical Industry, Ministry of the Gas Industry, the USSR Ministry of Construction, Road, and Municipal Machine Building, and Ministry of the Automotive Industry. This work has been poorly conducted in the USSR Ministry of Bakery Products, Goskomizdat [State Committee for Publishing Houses, Printing Plants, and the Book Trade, the Ministry of Land Reclamation and Water Resources, as well as in the production sectors under republic-level subordination. In the Ukraine, for

example, they still had doubts in April as to whether they needed to convert to the new system of awarding bonuses. It was not until May that a conference regarding this matter was held in the republic's Council of Ministers. Work has not proceeded vigorously enough in Azerbaijan, Kazakhstan, Uzbekistan, and several of the autonomous republics. The republic-level labor committees, in conjunction with the councils of the republic-level trade-union committees, have failed in their efforts to take the organization of this matter into their own hands.

In a number of ministries a great deal of attention has been paid to developing and bringing into the enterprises specific indicators, conditions, and time periods for awarding bonuses to management personnel; they have approached this in a non-traditional way, in accordance with the requirements of the new management mechanism. Thus, the former USSR Ministry of Power Machine Building established for its management employees bonuses for the basic results of economic activity in the form of shares from its total size divided up by the basic indicators of awarding bonuses as follows: for completing 100 percent of the volume of items in accordance with the contracts—0.375 times the monthly salary; for a 100-percent growth in labor productivity—0.225, and for the ultimate level of expenditures per ruble of commercial output—0.150 (in all, 0.75 times the salary).

The specific amount of a bonus depends mostly on the achievement of high production-efficiency indicators. For fulfilling the plan with regard to an increase in labor productivity the bonus has been calculated as 18 percent of the monthly salary, and for each percentage point of over-fulfillment—an additional 3 percent of the monthly salary. By analogy employees are provided with incentives to reduce expenditures per ruble of commercial output.

Still more effective incentives have been set up by the USSR Ministry of Instrument Making, Automation Equipment, and Control Systems. Here the specific amount of a bonus for management personnel at associations and enterprises is determined by taking into consideration the tautness of the production-output plan and its renewal. If a 60-percent increase in output volume is provided by means of labor productivity, the bonus for every percentage point in excess of the plan for the growth in labor productivity is increased by 1 percent, and the total increase in output volume—by 6 percent, but not more than 20 percent of the monthly salary. For each percentage point of over-fulfilling the assignment with regard to renewing the products being turned out, the bonus is increased by 1 percent of the salary, but not more than 30 percent of its monthly amount.

At certain machine-building enterprises they have been able to creatively approach setting up a system to award bonuses to employees for the basic results of economic activity and with regard to special systems. The new

principles of providing incentives have become the mobilizing factors here in unconditionally fulfilling contractual obligations, accelerating scientific and technical progress, upgrading product quality, reducing its production costs, and increasing labor productivity. At the Moscow Motor-Vehicle Plant imeni I.A. Likhachev the new system of awarding bonuses is an extremely important part of the full cost accounting and self financing under the conditions of which this enterprise has been operating since the beginning of the current year. Brigade collectives are awarded bonuses for carrying out production assignments re the products lost of parts, proceeding from the plans of sections and shops and for ensuring a high level of product quality. Herein the proportion of the bonus for qualitative indicators goes as high as 60 percent of its total amount.

The material motivation of subdivision managers, specialists, and office employees to accept, fulfill, and over-fulfill tightened-up plans has been strengthened. The total amount of funds for awarding bonuses (a share of the enterprise's integrated material-incentives fund) is determined by each structural unit and subdivision. The size of the funds—planned and actual—depends upon the increase of labor productivity and the reduction of production costs. Moreover, the indicated funds can be spent only if the indicators for awarding bonuses are fulfilled—the plan for selling products on the products list, increase in labor productivity, and a decrease in production costs. Bonuses are awarded to collectives of the subdivision as a whole. The bonus for each employee is determined by a council of the labor collective, taking into account the coefficient of labor participation, and can be higher than the existing limits. Thus, a bonus is earned by a collective as well as by individual employees.

At the Sumy Machine-Building Scientific-Production Association imeni M.V. Frunze a great deal of attention is paid to providing incentives for improving the cost-accounting indicators of the subdivisions' work. Thus, the bonus amounts earned by specialists and office employees at the basic shops and sections depend upon the use of the production capacity and upon turning out products with the proper qualities. Moreover, the link between the bonus and the end results is most evident: if the use of the production capacity and qualitative indicators are at an extremely low level, the amount of the bonus is insignificant; while, on the contrary, if the shop achieves its full capacity and best quality indicators, the bonus is increased to its maximum amount—0.75 times the monthly salary.

At the Vilnius Construction-Finishing Machinery Plant the indicators for awarding bonuses are determined by those production problems which each structural subdivision solves. For example, designers and technologists are encouraged primarily to create and introduce new equipment and progressive technology, to increase labor productivity and lower material outlays. Employees in the plan-expediting division are provided with incentives to fulfill the production plan in the basic products

list, ensure the completion of unfinished production, and the smoothness of product output. Employees in the basic shops are encouraged to fulfill the production plan with regard to the products list, increase labor productivity, and reduce material outlays. Bonus awards are made to brigade collectives and subdivisions as a whole, taking into account the end results and tightness of the plan assignments. Within the collectives a bonus is distributed, depending upon the labor contribution of each employee. Application of the new principles in awarding bonuses has facilitated the improvement of this enterprise's production-management activity. During the first half of 1987 product deliveries were fully carried out in accordance with contracts, while the plan for increasing labor productivity and profits was overfulfilled.

At the Lewis Association labor collectives are awarded bonuses for achieving indicators aimed at end results of production. These indicators are differentiated by subdivisions; they may coincide with those set for management staff or may differ, reflecting specifics of a subdivision and its production role. The incentive amounts are determined based on norms computed by taking into account the tautness of the plan assignments and level of using resources.

Some positive changes in awarding bonuses to designers and technologists have occurred at machine-building enterprises. They have set indicators reflecting the fulfillment of assignments re accelerating scientific and technical progress. Thus, at the Sverdlovsk Pnevmostroymashina Plant bonuses were previously awarded for fulfilling plans re sales volume according to obligations for product deliveries. Now the chief indicator for awarding such bonuses is fulfilling the plan re creation and introduction of new equipment.

Incentives have been improved for the enterprises' technical-service employees. New indicators for awarding bonuses have been set in the newly developed regulations. These include reduction in the number of items against which complaints are filed, absence of fines for turning out items which violate standards, specifications, etc. Thus, the USSR Ministry of Construction, Road, and Municipal Machine Building, upon agreement with the appropriate trade-union central committees, at first approved basic and supplementary indicators for awarding bonuses, and not until much later (in February and April) did they set specific bonus amounts. As previously the case, their amounts for basic economic results were set in percentages of salaries, stemming from the integrated material-incentive fund as preplanned by enterprises. But the main thing was that limits were no way dependent on improving end results of economic production. In line with this, there was weakening of the managers' motivation to show initiative in their work or mobilize labor collectives to fully utilize all reserves. No attention was paid to progressive experience of other

machine-building sectors where bonuses for management staff are set up as shares of its total amount and are distributed according to basic indicators of awarding bonuses.

Many ministries have shown passivity in introducing the new bonus system. Thus, the sectorial commissions of the USSR Ministry of the Automotive Industry and the USSR Ministry of Construction, Road, and Municipal Machine Building for conversion to the new wage conditions have never specially examined the question of effectively introducing the new bonus system at their own enterprises.

The above ministries held seminar-conferences on introducing new wage and bonus conditions after long delays—not until this year's first quarter. There was no centralized economic training for deputy ministers, main administration chiefs, or specialists. The automotive ministry failed to provide any timely study of the new bonus principles within the sectorial institute for upgrading skills.

Many ministries insufficiently involve sectorial scientific-research organizations in giving methods and practical aid to enterprises; they do not activate their base enterprises re developing optimal forms and methods to introduce the new wage and bonus conditions.

A study made in the first quarter of 1987 on conditions at 33 enterprises under the automotive and road-construction ministries showed that their right of independently developing and approving regulations for awarding bonus to employees is often used ineffectively; the new principles of providing incentives are not applied fully, but inconsistently, not always coordinated with the new management conditions, and only after delays. At the time of this study the Kiev Krasnyy ekskavator Plant, Mytishchinsk Machine-Building Plant PO, GPZ-1, and Moscow Tractor Electrical-Equipment Plant No 2 (ATE-2) lacked new bonus regulations.

Not all labor collectives had discussed the new bonus principles. At certain enterprises of the road-construction ministry (the Orel Dормашина Plant, Kostroma Rabochiy metallist, and Volga Cement Machine-Building Plant) workers, specialists, trade-union activists, and often even subdivision managers did not know the essence or principles of the new bonus system; they were unaware of the indicators for awarding bonuses. And so employee motivation to achieve high end results was reduced. At these and other enterprises trade-union committees had not engaged in mass-explanatory work.

Many enterprise managers did not know how to increase the stimulating role of bonuses in making sure that labor collectives achieved high end results. At 10 of 24 enterprises under the road-construction ministry which were studied bonuses are paid to brigade collectives for fulfilling production assignments set without taking into account section and shop plans. This negatively affects

enterprises' operational stability as a whole. At the Kostroma Strommashina and Sverdlovsk elevator plants, as well as the Odessa Plant imeni January Uprising, the product sales plan in line was contracts was fulfilled by only 95-98 percent for the first quarter of 1987.

Restructuring bonuses for designers, technologists, and scientific staff is still too slow. They are often provided with incentives, just as before, to achieve overall results at their enterprises rather than develop and introduce new equipment or progressive technology, to improve the quality and reliability of the items produced. Such conditions have been noted at the ATE-1, Moscow Powder Metallurgy, and several other plants. At 16 enterprises of the road-construction ministry the following indicator for bonuses—fulfillment of the product sales plan in line with contracts—is retained a basic for these employees.

The above shortcomings in providing incentives for specialists and scientific employees lead to stagnant phenomena in developing new equipment and technology. And it is not surprising that the Kiev Stroydormash Plant, Minsk Udarnik Road Machinery Plant, and Domodedovo Konditsioner Plant plan to renew their products this year by only 1 percent of their commercial output.

The new bonus regulations still insufficiently key OTK employees and other engineers to carry out preventive measures re upgrading item quality and reliability, and to prevent defects and violations of technical discipline. For this reason, losses due to defects at the Volga Plant during the first quarter of 1987 came to about 2 percent of the production cost of commercial output; as compared to the corresponding period of last year, they increased by a factor of almost 1.4.

No positive changes have occurred in bonuses for economizing on material and energy resources, a factor particularly characteristic of enterprises under the automotive ministry. Outlays on all materials and on all types of energy reached 5.5 billion rubles (28.2 percent of production costs) last year for the entire sector. A third of rolled ferrous metals has to be scrapped. This ministry fulfilled the 1986 task re average reduction in rolled ferrous metals by only 68 percent. Even under these conditions sufficient measures are not taken to improve norm setting for material resources, reliable accounting of their outlay, strengthening employees' motivation to economize on and make use of all materials. Enterprise managers channel inappropriately small amounts of money into bonuses for economizing on materials—for the automotive industry as a whole the amount is 6.1 million rubles (3.2 percent of the bonus total paid in 1986 from the integrated material-incentives fund) and when computed on a monthly per-worker basis—0.2 rubles, while for the specialist it comes to 0.9 rubles. This state of affairs is improving much too slowly.

Analogous shortcomings in awarding bonuses to enterprise employees for economizing on material and energy resources, setting norms, and keeping track of expenditures have also been revealed at enterprises under the road-construction ministry. Almost none of the enterprises checked up on have the needed monitoring instruments for keeping track of material-resource expenditures.

Provisions have not been made to study and directly link bonuses with the labor results of each employee, nor those of brigade collectives and subdivisions. The practice of setting the amount of the bonus as dependent on the tautness of production plans and assignments has not become widespread. And so not all labor collectives have conditions under which, when high production results are achieved, bonuses are correspondingly increased to the maximum.

Enterprises are too slow in converting to awarding bonuses to entire collectives, especially sections, shops, and divisions. Instances are too rare of outstanding collectives and specific employees being put up for bonuses or of being awarded them in lesser amounts if the necessary results of collective and individual labor have not been achieved. Instead of this, as previously the case, the employees have their bonuses taken away.

At some enterprises newly introduced bonus regulations are unjustifiably complicated; they provide many indicators and conditions for awarding bonuses, and this reduces employees' confidence in the reality of earning bonuses. The Orel Dormashina has set 35 production omissions for specialists and office personnel for which the amount of a computed bonus can be reduced by as much as 50 percent, plus 3 principal and 4 supplementary indicators for awarding bonuses. Also unjustifiably complicated are the regulations on awarding bonuses at the Kostroma Rabochiy metallist Plant, the Kiev Krasnyy Ekskavator Plant, and several others.

The above shortcomings lead to violations of social justice in wages, facilitate retention of a leveling approach to bonuses, whereby for achieving diverse results equal bonuses are paid. Thus, at the Volga Plant managers and specialists at Shops No 29 and 24 who ensured an increase in labor productivity during March 1987 at a level of 111-117 percent and those of 4 other shops who increased it by slightly more than 100 percent were paid the same bonus—10 percent of their salary.

On the whole, many enterprises have not radically improved their bonus systems; they have not succeeded in fully linking it with the requirements of the new economic mechanism. Several ministries and their scientific research organizations do not actively engage in seeking out and using the new forms of managing sectorial labor and wages which have justified themselves in practice; they have not rendered any practical aid to enterprises which have for the first time acquired the right to independently work out bonus regulations under

the conditions of developing self-management by labor collectives. Bonuses have not yet exerted any substantial influence on attaining high end results in the production management of associations, enterprises, and sectors as a whole; it has not been a sufficient stimulus.

Under the conditions whereby a radical reform of managing the economy and an increase in the independence and responsibility of labor collectives in solving production, economic, and social problems, ministries and enterprises must devote top-priority attention to questions of effectively using the new bonus system, having strengthened the provision of incentives for designers, technologists, and scientific staff directly for developing and introducing new equipment and progressive technology corresponding to world-level achievements and surpassing them, as well as for improving the quality and reliability of the products. This work must be conducted under the conditions of a broad-based glasnost and with the direct, active participation of all members of the labor collective. It is important that bonuses assist in restructuring the economic mechanism and converting enterprises to full cost accounting and self-financing.

Increasing the stimulating role played by bonuses is one of the most important trends in the decisions of the June (1987) Plenum of the CPSU Central Committee.

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### Effect of Wage Scale Changes on Productivity Noted

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[Article by V. Sychev, division chief, USSR Gosplan: "Procedure and Conditions of Wage Fund Formation"]

[Text] The methods of forming wage funds comprise one of the central questions of the radical restructuring of economic management. The principal thrust in improving the entire system of wage organization is ensuring the direct and rigorous dependence of wages on the end results of the economic activity performed by labor collectives. The objective prerequisites for implementing such a connection have been established in the USSR Law "On State Enterprises (Associations)."

Such an approach differs radically from the one which was in effect until recently, one which was aimed predominantly at an extensive type of development. The methodology of planning wage funds of enterprises and organizations was based on the following two initial indicators: the average wage level achieved and the actual average officially listed number of employees. Planning also relied on a rigid regulation of wages by the categories of personnel, occupations, and limitations on all types of bonuses and incentive payments.

Keying on quantitative indicators, along with regulating wage funds and their redistribution quite frequently in favor of poorly operating enterprises, led to an intensification of leveling tendencies, a gap between workers' incentives and the actual results being obtained by society from the work of collectives. Herein lay one of the basic reasons for low production efficiency and the problems which evolved regarding the insufficiently high quality of the products being turned out.

### On End Results

Implementing the party's strategic course aimed at accelerating this country's socioeconomic development and making the transition to intensive management methods required appropriate changes in wage planning and organization. One of the most important places in this work is occupied by broadening the independence of associations and enterprises, based on full cost accounting and by expanding self-financing to wages also. This is the specific, fundamental economic lever for raising the motivation and responsibility of enterprises, labor collectives, and each employee to society.

The first few steps in establishing a closer dependence between the results of enterprises' economic activity and those funds which they form for wages and the collectives' social development were taken in conducting a large-scale experiment in industry. Its framework substantially limited the directive-type planning of volumetric cost indicators and created genuine conditions for utilizing normative methods of forming economic-incentive funds dependent upon end results as well as increasing the volumes of production output and profits (lowering production costs).

The initial experiment showed that normatives activate the adoption of tauter tasks, channel enterprises into accelerated rates of development, stimulate the reduction of excess numbers of personnel, and facilitate the increase of labor productivity. The methods of normative regulation of wage funds have proved to be more effective than the straight directive-type planning of funds in their absolute terms.

The next step was converting enterprises to full cost accounting, self-support, and self-financing. The first to make the transition to the new operating principles were the Sumy Machine-Building Association imeni M. V. Frunze and the AvtoVAZ, whereas by the beginning of 1987 enterprises and organizations of five industrial ministries, as well as the USSR Ministry of the Maritime Fleet and the USSR Ministry of Trade had already converted.

The enterprises of these ministries established a normative distribution of profits to a share contributed to the budget and to a share remaining at their disposal for forming economic-incentive funds. This also ensured a direct connection between the collectives' incentives and the results obtained during a given period.

Beginning on 1 January 1988, the enterprises and organizations under 20 of the national economy's ministries and departments will convert to full cost accounting, self-support, and self-financing. Taking into consideration those already operating in this manner, the overall scope of industrial enterprises utilizing cost-accounting methods will amount in 1988 to about 60 percent with respect to the volume of industrial output being produced. Enterprises in the fields of communications, aviation, railroad, and automotive transport will be operating fully on cost-accounting principles. Thus, beginning in 1988, the mechanism of forming wage funds, keyed, to a significant degree, on economic management methods, will be functioning in most sectors of the material-production sphere.

Taking into account the sectorial characteristics of its utilization, the normative method has many variants, but from the viewpoint of principle, we may single out the following two types of forming wage funds at this stage: by incremental and by level normatives. The former are applied primarily in industry, agriculture, and in railroad transport, while the latter are used in construction and in automotive transport.

#### The Incremental-Normative Method

The incremental-normative method of planning wages has become fundamental for the period of the 12th Five-Year Plan. It has encompassed approximately 45 million people. Under this system the wage fund is defined as the sum-total of the following two values: first, the base-year fund and, second, the increase (or decrease) of the fund as computed with respect to the normative for each percentage point of increment (or decrement) in the volume of production output according to the indicator adopted for calculating labor productivity. The fund for assimilating new production capacities and facilities is handled separately.

The use of the base fund in the calculations is of paramount importance, inasmuch as it eliminates a substantial shortcoming of the previously existing system—planning from the already achieved level. This is brought about by the fact that the base fund is determined from the actually expended wage fund and all earned but unused savings. But an over-expenditure of the wage fund is not even taken into account when computing the base fund; nor does it give an enterprise the right, as was the case previously, to put in a claim for obtaining additional funds for wages.

The normatives for forming wage funds are determined by proceeding from the most important proportions provided for in the plan for the USSR's economic and social development, as well as taking into account the developmental characteristics of specific sectors in the 12th Five-Year Plan. Those ministries whose enterprises will convert to full cost accounting from 1 January 1988 on will be assigned, for example, the following estimated normatives for the remaining three years of the five-year

plan: re ministries of the machine-building complex it will be 0.3, the USSR Ministry of the Medical and Microbiological Industry—0.5, the USSR Ministry of the Chemical Industry—0.51, and the USSR Ministry of Ferrous Metallurgy—0.73. Taking into consideration the characteristics of material development and guaranteeing the assigned proportions of the 12th Five-Year Plan, it is precisely such a level of norms which ensures approximately equal possibilities for increasing the plan dimensions of enterprises' and associations' wage funds. And the actual increase of the collectives' wage funds will be directly dependent on the efficiency of their work and further improvement of the proportions provided for in the five-year plan.

Practical experience in the incremental-normative planning of wage funds shows that most ministries have set standardized (group) normatives for sub-departmental enterprises and associations. Thus, in the machine-building ministries normatives have been approved for groups of enterprises ranging from 0.25 to 0.3 (whereas the average for all ministries is 0.3). Because of the difference between normatives the ministries have formed centralized reserves for the wage funds. They are utilized for current regulation of the disproportions which arise—for amortizing over-expenditures during the assimilation of new equipment, as well as for forming the wage funds of newly introduced enterprises and facilities in accordance with state orders.

Four years of experience in using the incremental-normative method of forming wage funds have shown that it possesses several merits. Above all, this method allows us to ensure stability of the normatives through the years of a five-year plan, as well as their unity for groups of enterprises with analogous production conditions.

Of course, the incremental method of forming wage funds also has some shortcomings. The very fact that it uses the base fund has been criticized with particular frequency. In our opinion, however, the incremental-normative methods of wage planning have not exhausted their possibilities at the present, transitional phase, when a great deal of work is being conducted on restructuring price formation, investment policy, and the development of wholesale trade. Accumulated experience suggests that these methods create, for example, sufficiently powerful incentives for reducing the number of employees and point collectives toward economical expenditures of wage funds. And these are the central questions within the system of measures for deepening production intensification.

#### The Level-Normative Method

The second method of normative formation of wage funds being utilized at the present time is planning these funds by level normatives. This method is widely used in construction, where stable normatives—decreasing through the years of a five-year plan—are established for wage expenditures per ruble of work volume.

For the 12th Five-Year Plan the dimensions and dynamics of change in these normatives by years were also determined by proceeding from the plan's most important proportions. Thus, the planners took into account the need for an outstripping decrease in output wage-intensiveness as compared to the decrease in the material-intensiveness. The level of the normatives and the rate of their decrease have been differentiated by sectors, depending on the dynamics of development, the structure of the operations being performed, and the territorial development of the enterprises. By way of example, we have cited below the normatives (in kopecks per ruble of construction-and-installation operations of two construction ministries:

Ministry	1987	1988	1989	1990	Change 1987-90
Ministry of Construction in the Eastern Regions of the USSR	35.98	35.43	34.42	33.86	-5.9
USSR Ministry of Installation and Special Construction Work	16.43	16.07	15.76	15.52	-5.5

Normative planning of the wage fund in construction has had a positive influence on this sector's functional efficiency. Beginning in 1986, when the normative methods were finally formulated, the negative tendency whereby the increase in average wages outstrips the increase in labor productivity was shattered for the first time in many years. If, for example, in 1985 the average wage increased by 1.13 percent for every 1 percent of increase in labor productivity, during 1986 this correlation amounted to 0.69 percent, while during the first six months of 1987 it was 0.68 percent.

Nevertheless, level normatives, just as is the case with incremental ones, also have some shortcomings. As practical experience has shown, the steadiness and stability of the normatives are not ensured; they are excessively individualistic in their nature.

#### Restructuring Wage Organization

The introduction of normative methods of forming wage funds and strengthening their dependence on final production results have opened up basically new organizational-economic conditions for comprehensively restructuring all the fundamental elements, forms, and sources of wage organization—wage rates, surcharges, supplementary payments, and bonus awards. A complex of measures is being implemented in this field in accordance with the decree of the CPSU Central Committee, the USSR Council of Ministers, and the AUCCTU, entitled "On Improving and Introducing New Wage Rates and Salaries for Employees in the National Economy's Production Sectors" (dated 17 September 1986).

This decree and now also the USSR Law entitled "On State Enterprises (Associations)" for the first time organically links the formation of wage funds—while ensuring the priority of national-economic interests—with the collective's broad democratic rights re utilizing these funds.

Today, when enterprises and associations have acquired the economic instrument for improving wage funds, they should solve the specific problem of significantly raising wage rates and salaries (for workers by 20-25 percent, for specialists and office employees by 30-35 percent) within the limits of the wage funds formed in accordance with the approved, stable normatives.

In practical terms this means, as calculations of the USSR Goskomtrud [State Committee for Labor and Social Problems] have shown, that each collective must seek out additional reserves and increase their plan assignments for the 12th Five-Year Plan by at least 5-7 points. If in industry, for example, the plan assignment re increasing labor productivity amounts to 25 percent, then its performance at the level of 30-32 percent must be ensured. Seeking out additional measures in all sectors of material production will allow us to lay off more than 100,000 persons before the end of 1990.

The practical implementation of measures re introducing new wage rates and salaries has already begun. Thus, at railroad-transport enterprises, as a result of carrying out measures to introduce new wage rates, during the course of 1986-1987 some 280,000 employees were laid off, labor productivity increased by 14-15 percent, and the wages of the remaining employees rose by 10-12 percent. For the sake of comparison we should mention that during the 10-year period from 1976 to 1985 labor productivity in railroad transport increased by merely 8.7 percent.

In the oil-drilling industry 70,000 people were laid off during the period of a year, and the savings obtained made it possible to introduce new wage rates and salaries for 600,000 employees. During the first six months of 1987 a 5.1-percent increase in labor productivity was achieved, whereas in the course of the last six years it declined systematically. Analogous examples can be found in construction and in other sectors of the national economy.

Unfortunately, there are also certain collectives which still hope that the state, as used to be the case previously, will allot a subsidy for introducing new wage rates and salaries; they are wasting time and effort on unnecessary correspondence with higher-ranking organs.

Practical experience in introducing new wage rates and salaries has likewise revealed other negative tendencies. Thus, the managers of certain enterprises and organizations in pursuing the fastest possible "introduction" of new wage rates and salaries are attempting to proceed

along the easiest and least painful path—they are reducing the amounts of bonuses and other super-wage payments. Everybody loses from such an approach—workers, office employees, and the state: because, of course, neither labor productivity nor wages are increased. In order not to allow such cases to occur, we must be guided by the following simple criterion—the right to introduce new wage rates and salaries should be obtained only by those collectives which guarantee an above-plan increase in labor productivity with a corresponding growth in total wages (not just the rates!).

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## EDUCATION

### Draft Guidelines for Training Economic Specialists

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in Russian No 39, Sep 87 pp 19-20

[Article under rubric "Draft": "Basic Directions for the Fundamental Restructuring of Higher and Secondary Economic Education"]

[Text] USSR Minvuz [Ministry of Higher and Secondary Specialized Education] and the Economics Department, USSR Academy of Sciences, have prepared, with a consideration of the decisions of the July 1987 Plenum of the CPSU Central Committee, a draft of the "Basic Directions for the Fundamental Restructuring of Higher And Secondary Economic Education." The draft is being presented for discussion by the interested ministries and departments, enterprises and organizations, higher educational institutions, and specialists and scientists. The editorial office of EKONOMICHESKAYA GAZETA and USSR Minvuz will be grateful to everyone who expresses an opinion with regard to the essential content of the draft.

The key task of implementing the strategic course of the 27th CPSU Congress, which is aimed at the acceleration of socioeconomic development, is the cardinal restructuring of administration in the chief sphere of society — economics, at the basis of which lies "the transition from chiefly administrative methods to chiefly economic methods of management at all levels, to the broad democratization of administration, and to the taking of all steps to increase the role of the human factor." The June 1987 Plenum of the CPSU Central Committee developed the political line for restructuring the administration of the economy, theoretically substantiated the radical reform of the economic mechanism, and definite a concrete program of actions. The carrying out of that program is largely determined by the cadre potential in the national economy and is one of the influencing factors in the need for the fundamental improvement of

the quality of training of specialists for the administration of social production and the creation of a continuous system of economic education throughout the country.

#### 1. Need for the Restructuring of Economic Education Under Conditions of the Radical Reform of the Administration of the Economy

There has formed in our country a well-ramified system of higher and secondary special education, of raising the proficiency level, and retraining cadres in the field of economics and the administration of the national economy. The persons studying economic specialties at 309 higher and 839 secondary special educational institutions number 1,260,000, a figure that constitutes 13 percent of all the higher and secondary students, and the number of students graduating with economic specialties exceeds 350,000 persons a year. Every year more than 3 million managers and specialists in the national economy raise their proficiency level and undergo retraining with regard to vitally important economic problems. The development of economic education has promoted the creation of the cadre prerequisites for changing over to the new management methods.

At the same time, the quality of the economic training of specialists no longer conforms to the needs of the national economy. The graduates of higher and secondary special institutions have been assimilating to an insufficiently profound degree and at too slow a rate the changed methods of occupational activity. In the training of economists there has been a gap between economic practice and modern scientific research. Most of the economic educational institutions lack any firm ties with production or with the academy or branch science.

The implementation of the new demands on cadre training has been hampered by the unjustifiably narrow specialization of economic education. Under the influence of departmental interests, a situation has developed in which the training of specialists with economic specialties is conducted in 53 specialties at higher special educational institutions and in 50 at secondary ones.

In the content of the economic education there has been an underestimation of the importance of fundamental economic knowledge. The practice that has developed for instructing the economic disciplines does not guarantee the synthesis of the knowledge that is being acquired by the economists, or the perception of that knowledge as a system, as an integrated whole. Economic categories and concepts are instructed in an isolated manner, without a consideration of their interrelationship. There has been a reduction in the attention paid to studying the economic mechanism, the theory of economic growth, forecasting and long-range planning, economic methods of accelerating scientific-technical progress, economic sociology and social psychology, new

forms of material-technical support, pricing, the modeling of economic phenomena and processes, and the economics of the use of the environment and of population.

A detrimental effect is exerted on the quality of specialist training by the predominance of lecture-type classes over practical ones, by the weak use of progressive methods of increasing the cognitional-learning activity of the students, and by the insufficient level of computerization of the teaching process. The four-year instruction periods that have been established for many economic institutions of higher learning have not proven their worth.

The fundamental improvement of economic education is being restrained by the shortcomings in the training and retraining of highly-qualified professor and instructor cadres in the directions that are decisive for restructuring the economic mechanism. The scientific potential of the economic institutions of higher learning and the economics departments is by no means being used completely.

The material-technical base of the economic school system no longer conforms to the present-day requirements. The definition of the need for economic cadres in the branches of the national economy is of a subjective nature. The training of economists is being justifiably duplicated and dispersed across the country's territory.

The overcoming of these shortcomings requires the fundamental restructuring of the higher and secondary special economic school system, the purpose of which is the guaranteeing of the training for the national economy of a new type of specialists, who possess the knowledge and the mental and physical skills necessary for the practical implementation and development of the new economic mechanism, and for exerting an active influence upon the technical remodeling of the national economy and the acceleration of the country's socioeconomic development.

## 2. Methods for Fundamentally Improving the Quality of Training of Specialists With Higher Economic Education

The change in the nature of the labor performed by economic cadres under the conditions of the restructuring — the change from the chiefly executive and informational to the chiefly creative and analytical — is thus one of the factors that influence the need to change the occupational requirements on the training of specialists with higher economic education. These include:

— the formation of new economic thinking on the basis of the thorough study of Marxist-Leninist economic theory and the ways to implement it in practice;

— the development of creative capabilities, of taking more energetic steps to bring people into contact with the improvement of methods of administering the economy;

— the guaranteeing that people have profound professionalism and have mastered the entire arsenal of economic methods;

— the increase in the role of the social aspects in instruction;

— adaptation to the profound changes in the content and nature of labor which are linked with the fundamental renovation of the material-technical base of society on the basis of the achievements of the scientific-technical revolution;

— the mastery of the practical skills needed for activity as an organizer and manager.

### 2.1. Structure of Higher Economic Education

The implementation of these requirements determines the need for fundamentally new approaches to the structure of higher economic education. It is necessary to change over to a new listing of economic specialties that completely conforms to the present-day condition and the long-range tendencies in the development of the system of dividing labor in the sphere of administration of the national economy. This listing must conform to the basic economic functions and objects of economic administration, must take into consideration the needs that the national economy has for specialists with higher economic education, must combine stability with flexibility, and must stipulate the possibility of eliminating obsolete specialties and of achieving the outstripping discovery and development of new and promising ones, as well as the time-responsive extension of specializations.

Under the present-day conditions, when the entity that is becoming the basic link in social production is the enterprise, there is a crying need for the division of the list of specialties in higher economic education into two groups that have different principles of construction and content of the instructional process:

— the group of general economic specialties, which will be taught to specialists for fulfilling specialized economic functions at the national-economic, interbranch, regional, and partially the immediately production levels, with a differentiation of the specialties chiefly on the basis of the functional features. These specialists should be taught at the economics departments of universities, at higher educational institutions specializing in planning, economic finance, economics, and economic statistics, and by institutes of the national economy;

— the group of branch economic specialties, which will be taught to specialists for the fulfillment of economic functions directly at the level of the enterprises (associations) and their subdivisions, with a differentiation of the specialties in this group on the basis of the branch

complexes. These specialists should be taught at the economic-engineering institutions of higher learning and at the departments of the polytechnical and branch institutes.

Within the confines of the first group of specialties the economist must be trained to fulfill accounting, analytical-statistical, economic-planning, and scientific-research operations at planning, financial, statistical, and sociodemographic agencies, social insurance agencies, systems departments (laboratories) for improving the administration of the economy, in the functional economic services of the interbranch complexes of the national economy, and also in the economic and financial subdivisions, accounting offices, and social services of enterprises (associations). He must be able to carry out the development of socioeconomic forecasts, plans for social and economic development, finance and credit settlements, the accounting, monitoring, and analysis of economic activity, and the collection and processing of economic information.

The group of economic specialties is opened by the specialty "Political Economics." Political economists must have a thorough understanding of the essence of the social economic relations, must know how to study the natural laws underlying their development, must formulate the approaches to their practical use in socialist management, must take a systems approach in developing and implementing the new economic mechanism, and must reveal the peculiarities of the development of capitalism. In the light of the decisions of the 27th CPSU Congress, it will be necessary to carry out a cardinal renovation of the content of instruction for political economists, and to enrich it with innovative ideas of economic theory and the party policy, and must take a turn toward life, toward the reality of the modern era. It will be desirable to stipulate the specialization of the political economists at the concluding stage of instructions in institutions of higher learning with a consideration of the nature of their forthcoming occupational activity — scientific-research, instructional, or practical.

Standing between "Political Economics" and the functional specialties is the specialty "Economics and Administration of Production." Unlike "Political Economics," this specialty is of a more concrete nature, and it broadly arms the specialist with knowledge dealing with economics and the administration of production. Unlike the functional specialties, it places in the center of education the overall systems requirements for the use of the economic mechanism, and the mastery of its principles as applicable to the economy as a whole.

Specialists in this field must be able to study, develop, and implement the integrated economic mechanism with a consideration of the interrelationships among the individual economic functions at all levels of administration, and primarily in the basic link of social production.

The new approaches to the planning of the national economy, the increase in the role that normative methods play in it, and the need for a comprehensive approach to the development of state production orders with a consideration of social priorities determine the desirability of training specialists in economic and social planning.

The changing conditions of management require the refinement of the specialization area for the training of cadres dealing with finance, credit, and pricing. The changeover chiefly to economic methods of administration considerably increases the need for the training of qualified specialists in this area and requires the reinterpretation and fundamental renovation of the content of education in these specialties.

The necessity for the professional resolution of the tasks of increasing the human factor presupposes the need for the training of cadres specializing in the economics of labor, economic sociology, and demography. These specialists have been called upon to provide broad education in the area of the economics of labor, the social development of labor collectives, the forms of realizing socialist property, the organizing of the distributional relations, and the economics of population and demography.

The fundamental restructuring of statistics, accounting, and the analysis and monitoring of economic activity, and the intensification of their role in administering the economy, dictate the need for assuring the qualitative improvement in the study of these questions by all economists and the carrying out of additional measures to develop these specialties.

The further development and expansion of the use of economic-mathematical methods, the implementation of computerized technological schemes in economic work, and the automation of administration define the necessity for training specialists in the area of economic cybernetics, economic informatics, and automated control systems, which specialists serve the developing "information industry."

The conversion of the foreign-economic ties into a component part of the economic activity of many enterprises and organizations requires the fundamental improvement of the training in this area of all the economic cadres, as well as the expansion of the training of specialists in the area of foreign-economic ties. Under the new conditions, the number of specialists graduated in this specialty must satisfy the needs for cadres at the foreign-economic departments, as well as the economic agencies and enterprises (associations).

Proceeding from what has been stated, when higher economic education is restructured for this group of specialties the following approximate list of specialists must be taken as the basis:

1. Political Economics
2. Economics and Administration of Production
3. Economic and Social Planning
4. Finance and Credit
5. Pricing
6. Economics of Labor
7. Economic Sociology and Demography
8. Statistics
9. Accounting, Monitoring, and Analysis of Economic Activity
10. Economic Cybernetics
11. Economic Informatics and ASU [Automated Control Systems]
12. International Economic Relations

Proceeding from the makeup of the tasks to be resolved, it is desirable for the specialists who have received higher education in the specialties in this group to be certified as "economist."

Within the confines of the second group of specialties, it is necessary to train specialists in the branch specialization area — engineer-economists.

The branch economist must be trained to execute analytical, production-planning, construction-design, and scientific-research operations at the enterprises, in production and scientific-production associations, and in construction-planning and scientific-research organizations. The engineer-economist must master the methods of technical-economic analysis and evaluation of the development of the enterprise (associaton) and its subdivisions, the organization of production and administration, scientific-technical forecasting, technical-economic and time-responsive production planning, the scientific-technical preparation of production, intraproduction cost accounting, and the organization of labor and the development of norms and incentives for it.

The role of the engineer-economists in the comprehensive resolution of the tasks of developing the enterprises moves into the central place in their professional activity the thorough mastery of the methods of designing the production processes and syystems, the systems analysis of various factors of intensification of branch production, primarily those linked with the acceleration of scientific-technical progress, and the ability to correlate the integrated economic mechanism and its very important production-economic functions with the specifics of the technical and technological base of production.

Under the new conditions this group of specialties must be oriented not toward individual branches of the national economy, but to consolidated objects of economic administration (national-economic complexes and branch complexes) — the metallurgical, machine-building, fuel-and-energy, and chemical-and-timber complexes, the printing, textile, and light industry, the transportation, agroindustrial, and construction complexes, communication, trade and public nutrition, and the social-cultural sphere.

In this group of specialties it is desirable to organize the training of specialists in the area of the economics and administration of scientific-research and construction-planning and design operations in connection with the major specifics of the economic work in specialized

scientific-research and construction-planning and design organizations, NPO [scientific-production associations], and interbranch scientific-technical complexes. The importance of training these specialists for the "knowledge industry" is increasing sharply under the new management conditions, with the changeover of scientific-research and construction-planning and design organizations to self-support and self-financing.

All this determines the possibility of taking as a basis in this group the following approximate list of specialties:

1. Economics and Administration in the Machine-Building Complex
2. Economics and Administration in the Metallurgical Complex
3. Economics and Administration in the Fuel-and-Energy Complex
4. Economics and Administration in the Chemical-and-Timber Complex
5. Economics and Administration of Publishing and Printing
6. Economics and Administration of the Agroindustrial Complex
7. Economics and Administration of Textile and Light Industry
8. Economics and Administration in the Construction Complex
9. Economics and Administration in Trade and Public Nutrition
10. Economics and Administration in the Transportation Complex
11. Economics and Administration of Communication
12. Economics and Administration in the Social-Cultural Sphere
13. Economics and Administration of Scientific Research and Construction Planning

The specifics of the tasks to be resolved by specialists who have received higher education in the specialties in this group determine the desirability of certifying them as "engineer-economist."

## 2.2. Content of the Training of Specialists With Higher Economic Education

The training of specialists with a broad area of specialization, which training is stipulated by the new structure of economic specialties, requires major changes in the content of the instructional process. It will be necessary to reject the existing multidiscipline curricula, guaranteeing their restructuring on the subject-cycle basis, which presupposes the isolated of consolidated, through cycles of disciplines.

The cycles in the sociopolitical and natural-science disciplines, which form the training that provides the specialists with their fundamental view of the world, must be unified and brought closer to the specialization area of the cadre training. They must form the world-philosophical and methodological base for the integrated,

systems understanding of socioeconomic and scientific-technical phenomena, and for interpreting the economic processes in interrelationship with the development of the social sphere and scientific-technical progress. It is especially important to improve qualitatively the study and instruction of the sociopsychological aspects, revealing the increasing role of the human factor in the development of the economy.

The changeover to the new management conditions dictates the need for a fundamental improvement of the general economic training of the cadres. It is important to achieve a situation in which the economic specialists possess qualitatively more meaningful training in the area of the theory of administration, the organization of production, long-range and current planning and forecasting, financing and the granting of credit, the establishment of labor norms and incentives, economic sociology, and social psychology. For purposes of intensifying the comprehensive nature of instruction, it is desirable to introduce the course "The Economic Mechanism of Administering the Socialist Economy."

It will be necessary to change fundamentally the general engineering and production-technology training of economic specialists. The center of gravity in this training must be shifted to the mastery of the principles and underlying natural laws in the structure and development of technical and technological systems. In the process of instruction it is important to guarantee the understanding of the interrelationship between the level of technological processes, the quality of output, and the economic indicators of the enterprises' activity, as well as the social aspects of their development.

It is necessary to improve qualitatively the instruction of the economic-occupational disciplines. The basic tasks of the economic-occupational cycle should be seen in the more profound specialization of the economic cadres, in the development in them of firmly established mental and physical skills for their occupational activity, in their mastery of the latest achievements of economic science and economic practice in their area.

It will be necessary to achieve the real integration of higher economic education, production, and science. For these purposes it will be necessary to implement an integrated system of forms, means, and methods for training economic cadres, which system guarantees the constant and close interrelationship between theoretical instruction and practical. It is necessary to shift the classes, especially those in the disciplines in the economic-occupational and production-technology cycles, to the enterprises and to scientific institutions, with the broad use of their modern material-technical base and with the involvement of the economic managers, scientists, and specialists in the instructional process. This will be promoted by the development of a network of branches of the specialized departments in the production environment and also by the creation of instructional-scientific-production complexes.

It will be necessary to reconsider the approaches that have formed with regard to the organization and conducting of practical production assignments for the future specialists, bearing in mind the reduction of the period for the occupational growth of the cadres, and their mastery of the specific methods and practical skills needed for economic work. It will be necessary to give a through nature to these practical assignments, having them encompass the entire instructional period.

The series of measures to achieve a fundamental change in the training of specialists with higher economic education will require the increase in the periods of time for instructing them, and the reconsideration of the correlations of the volumes of specialist training in the daytime, nighttime, and correspondence forms of instruction.

It will be necessary to strive for a situation in which the instructional forms and methods, and the entire atmosphere at the higher educational institutions, contribute to the development of the students' initiative and socialist enterprise, an economic, thrifty attitude toward labor and socialist property, and the ability to manage effectively on the basis of the most advanced methods.

### **3. The Creation of a System of Continuous Economic Education Throughout the Country**

The changeover to the new quality of economic development is not a one-time action. It opens up an entire area of increasing changes in the productive forces and production relations of socialism, which will be carried out in close unity with reforms in the content, organizational forms, and methods of economic work. In order to guarantee these reforms from the point of view of cadres, it is necessary to extent an integrated and effective system of continuous economic education — a component part of the single system of the continuous education of the workers.

#### **3.1. Change in the Requirements on the Training of Specialists With Secondary Economic Education**

The restructuring of the economic mechanism is linked with the increase in the role of the economist with secondary special education, whose functions will broaden considerably. This will cause an increase in the national economy's need for these specialists.

The increase in the contribution made by the secondary special school system to raising the level of the economic work requires the overcoming of the underestimation that one has discerned in evaluating the capabilities of the middle-level specialists, and the overcoming of the artificial narrowing of the sphere of their use. In this light, it is necessary to carry out additional measures that guarantee the more precise division of duties among the graduates of the higher and secondary economic educational institutions in conformity with their proficiency level. It will be necessary to increase the self-interestedness of the enterprises and organizations in substituting

for the positions that presuppose the predominance of subsidiary economic labor by cadres with secondary economic education. The implementation of these measures will create conditions for the balanced development of the higher and secondary economic school systems.

The secondary economic school system must be oriented toward the training of economic cadres for working at the level of the brigade, sector, shop, and economic bureaus and departments of enterprises (associations). These specialists have been called upon to collect and process economic information, to resolve the time-responsive economic and organizational questions, to conduct the accounting, and to guarantee the preparation of the statistical reports and the use of the means of computer technology in economic computations.

In the content, structure, and organization of secondary economic education there must be a reflection of the critical aspects of the restructuring of the training of economists in institutions of higher learning. At the same time the work of assimilating in technicums and technical schools the innovations in higher economic education must be carried out on the basis of the careful analysis of the peculiarities of the occupational activity of the middle-level economic cadres. This analysis, in particular, shows that, in secondary special educational institutions, it is desirable to reconsider the list of specialties that are oriented both to the mass types of economic labor of medium complexity, and to the specific branches of production. Shifts in the content of the training of economists in the secondary special school system must guarantee the improvement of the economic-occupational knowledge, their mental and physical skills, and the qualitatively higher level of their mastery of the technological aspects of economic work, with a consideration of its computerization.

On the basis of the training of specialists with secondary special economic education who have sufficient work longevity in their specialty, it is necessary to broaden the forms of training specialists with higher economic education in abbreviated periods of time. It would seem to be especially important to achieve the further development of giving abbreviated periods of training to specialists in the organization of production. The training of line managers at the primary and middle level of the administration of production from among the workers who are brigade leaders and who have secondary special education and experience in production work, and who have been elected by the labor collective for executing the function of administration, is of great social and political importance. Under the conditions of the democratization of the administration of the economy, it is exceptionally important to teach the professional administrative knowledge to the managers at the primary production level, at the very place where the material values are created.

### **3.2. Economic and Administrative-Organizational Training of Specialists in the National Economy**

It is necessary first of all to reinforce considerably the foundation of the economic training of specialists in the national economy — to renew the content and to improve the quality of the instruction and study of the economic-administrative disciplines. The course of the political economics of socialism must be enriched by aspects of the implementation of the new economic mechanism. It is necessary to strive for a situation in which the mastery of them lays the scientific foundations for modern economic thinking, as well as a stable theoretical base for studying the disciplines that reveal the questions of branch economics, the organization and planning of production, and the administration of enterprises.

It is necessary to overcome the gap that exists between those disciplines and the specialization area of cadre training, to bring their content closer to the occupational tasks of the future specialists, and to achieve a substantial increase in the activity rate of the instructional process. The knowledge acquired by the students in the process of studying the subject matter in economic administration must definitely be reinforced and developed in the course of classes dealing with general occupational and special disciplines. That knowledge must be used when the students are carrying out their yearly and graduation projects. It will be necessary not simply to guarantee the thorough nature of the economic education of the future specialists during the course of the entire instruction period, but also to instill in them a self-interestedness in the constant supplementing of their economic knowledge, and the practical application of that knowledge for the purpose of resolving specific production problems.

### **3.3. Raising the Proficiency Level and the Retraining of Economic Managers and Specialists in the National Economy**

The implementation of the Law Governing the State Enterprise (Association), their conversion to complete cost accounting and self-financing, and the fundamental restructuring of the central, branch, and regional agencies of administration make it mandatory, within compressed periods of time, to raise the proficiency level and to carry out retraining in the area of the vitally important economic-administrative subject matter for all line managers and specialists.

The task consists in guaranteeing the restructuring of the on-job psychology of the cadres, the overcoming of the obsolete, arbitrarily administrative and technocratic approaches in administration, and the mastery of the vitally important tasks of the party's economic and social policy, advanced methods of management and progressive forms of organizing labor, the specific knowledge and the mental and physical skills for economic-organizational work under conditions of self-financing and

self-administration, and also with a consideration of the programs for the fundamental technical remodeling of construction which are being carried out in the branches.

In order to resolve this task, it will be necessary to change over from periodic instruction to the continuous instruction of the managers and specialists, and to guarantee the mobility, flexibility, and effectiveness of raising the proficiency level and increasing the retraining in subjects dealing with economic administration.

It is necessary to increase substantially the role of the goal-oriented preferential instruction on problems of the restructuring of the economic mechanism on the basis of orders issued by enterprises (associations).

In the process of instruction it is necessary, in addition to assuring that the managers and specialists acquire professional knowledge, to guarantee their time-responsive adaptation to the new economic mechanism, their mastery of the methodology of the practical implementation of the innovations under the conditions of the existing production, the overcoming of the psychology of well-established behavior, and the improvement of the work methods and style. The managers and specialists must be armed with economic knowledge and with the mental and physical skills needed in economic work, in a volume that is sufficient for competent joint activity with the professional economists.

When striving for the fundamental improvement of the economic training of all the participants in social production, it is necessary to guarantee the creation of a system of continuous economic education throughout the country, beginning with the economic training of students in the general-educational schools and the vocational-technical schools and ending with the training of economic cadres with the highest proficiency level (candidates and doctors of sciences).

#### **4. Cadre, Information-Methodology, and Material-Technical Support of the Restructuring of Economic Education**

##### **4.1. Raising the Proficiency Level and the Retraining of the Cadre Potential of the Economic School System**

The fundamental restructuring of higher and secondary economic education is impossible without the creation of a system for raising the proficiency level and for retraining the instructor cadres for economic and engineer-economic institutions of higher learning, schools, and departments, and secondary special educational institutions.

In order to guarantee the required level of competency of the professor and instructor cadres in the sphere of economic education, it is necessary:

— to determine the base educational institutions for the regular raising of the proficiency level of the professor and instructor staff;

— to organize, under the base economic institutions of higher learning, consultation stations for the instructors in the disciplines dealing with economic administration;

— to expand in the institutions of higher learning the training of economic cadres with the highest level of proficiency (candidates and doctors of sciences);

— to create conditions for the active participation of the leading instructors in the economic disciplines in conducting administrative consultative sessions and organized planning on a contractual basis.

##### **4.2. The Major Renovation of the Methodological and Informational Support of the Instructional Process**

The complete, prompt, and flexible support of the instructional process, in the form of textbooks, instructional and graphic aids, and informational and normative materials, is one of the basic elements of the restructuring of higher and secondary economic education, which is linked with major and dynamic changes in the economic mechanism.

The reduction of lecture-type classes and the large emphasis on the students' independent work depend primarily on the availability of textbooks, teaching aids, books of problems to be solved, collections of practical games, production situations, and laboratory projects, lecture outlines for special courses, and other teaching aids.

The reduction of the periods of time required to develop and publish materials dealing with instructional methodology and the improvement of their quality require the restructuring of the publishing activity of the higher school system. It is necessary to expand the publishing subdivisions in the economic institutions of higher learning, to give the priority to the publication of instructional literature dealing with economic specialties, and to reduce the periods of time required to publish economic textbooks and teaching aids to one year.

It would be desirable to expand considerably the preparation and use in the instructional process of instructional movies, video cassettes, and magnetic-tape recordings. One vitally important thing would be the creation of a special instructional television channel on TsT [Central Television], that would throw light in a time-responsive manner on the theory and practice of implementing and developing the restructuring of the administration of the economy.

The creation of a system for supporting the instructional process with scientific, production, and administrative-norm information must promote the prompt training and retraining of the instructor staff and the revision and

updating of the training-methodology materials with a consideration of the rapidly changing economic situation throughout the country.

The formation of instructional-scientific-production complexes partially resolves this problem on the level of the primary link in the higher school system. At the same time the completeness and quality of the informational support of economic education depends upon the adopted system of regulating the support of the institutions of higher learning, the technicums, schools, and departments specializing in economic subjects with informational, normative, and statistical materials provided by central economic agencies and agencies of branch, interbranch, and regional administration, and the Economics Department of USSR Academy of Sciences, as well as with foreign instructional and scientific literature dealing with economic topics. In order to store this information, to issue it, and provide it in a regulated manner to educational institutions, it would be desirable to create a single information data bank for economic education on the base of the NII VSh [Scientific-Research Institute of the Problems of the Higher School System] and similar subdivisions in the Ministry of Higher and Secondary Special Education in the union republics.

#### 4.3. The Intensification of the Role of Economic Science in the Development of Economic Education

The development of science in the higher school system is one of the most important reserves for improving the quality of the training of economic cadres.

In the course of the restructuring of science at the institutions of higher learning, it is necessary to guarantee the intensification of the integration and coordination of the economic institutions of higher learning, schools, and departments, with the branches of the national economy, the regional agencies of administration, and the academy institutions for the resolution of the most important socioeconomic and scientific-technical problems. In addition, it is necessary to stipulate the broader involvement of the scientific collectives at economic institutions of higher learning (schools, departments, and laboratories) in the creation of interbranch scientific-technical and scientific-production centers.

It is important to expand the work practice of the economic institutions of higher learning and schools with respect to orders issued by the central and regional economic-planning agencies. Projects conducted on the basis of economic contracts and long-term contracts with enterprises must be executed for large-scale socioeconomic and scientific-technical problems, the results of elaborating which must be used in the instructional process in order to improve the quality of specialist training.

One of the most important tasks of science at the institutions of higher learning is the broad involvements of the students in scientific research. It is necessary on a broader scale to introduce elements of scientific research into the instructional process, and to develop all forms of NIRS [students' scientific-research work], and the scientific and technical creativity of the students.

#### 4.4. Major Redesigning of the Material-Technical Base of the Higher and Secondary Economic School System

The level of development of the material-technical base of the institutions of higher learning largely determines the quality of the specialist training, inasmuch as, on the basis of the application of modern technical means, one observes the development of dynamic methods of instructing the students, the guaranteeing of the computerization of the teaching process, and the creation of the conditions for bringing the content of the specialist training closer to the long-term conditions of production.

The sharp complication of the tasks of economic education under the conditions of the major reform of the administration of the economy and the restructuring of the higher and secondary special school system requires the fundamental redesigning of the material-technical base of the economic school system within the shortest periods of time and on a planned basis. It is necessary to guarantee the purposeful allocation of the necessary resources to that sphere, including those allocated at the expense of the considerable increase in the funds from the appropriate ministries and departments, and to strive for the efficient use of those funds. It is necessary to make more dynamic use, for purposes of instructing the students, of the modern base of advanced enterprises, associations, and scientific institutions. It will be necessary to stipulate in the plans for the economic and social development of the national economy, and to strive to achieve in the practical situation, the outstripping providing of the instructional-laboratory and experimental base of the economic school system with new computer and organizational technology.

The basic task of the fundamental restructuring of economic education is to provide cadre support for implementing and developing the major reform in the administration of the economy. The active participation of all the personnel in the economic school system in this restructuring, in close interaction with the economic managers and specialists in the national economy, and with the scientists at the academy and branch institutes, will guarantee the implementation of this task.

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**Restructuring of Curriculum in Secondary Education Examined**  
*1828002a Moscow SREDNEYE SPETSIALNOYE OBRAZOVANIYE in Russian No 8, Aug 87 pp 2-7*

[Article by V.G. Shipunov, chief of the Teaching Methodology Administration of Secondary Special Education of the USSR Minvuz [Ministry of Education]: "Crucial Tasks in Restructuring Secondary Special Education"]

[Excerpts] The 27th CPSU Congress and the January and June (1987) Plenums of the Party Central Committee have placed before pedagogical personnel the cardinal tasks of deepening restructuring and democratization in public and social life and raising the work level of key personnel. These steps will create the basic preconditions for the energetic and persistent implementation of the policy of accelerating the socio-economic development of the national economy of our country, a most important factor of which is the restructuring of higher and secondary special education.

The time that has passed since the appearance of the Fundamental Areas of the Restructuring of Higher and Secondary Education in the country has been a time of action, interpretation of the substance of the work of secondary special education and analysis of the serious shortcomings in its work in all echelons and at all levels for all of us.

The pedagogical personnel of secondary special educational institutions and administrative organs are facing tasks that are non-traditional: changing the nature and structure of the training of specialists in those areas in which the sectors of the national economy and their associations and enterprises have a profound vested interest.

The continuous growth in indicators of acceptance and graduation of specialists and the steady trend toward a reduction in the number of positions for technicians has led today to quite unacceptable waste and major distortions in planning, distributing and utilizing specialists. It has become the rule rather than the exception where certain executives, for the sake of eliminating shortages in work personnel as a result of turnover, strive to "plug up" any hole in production with technicians—whether the discussion concerns engineering duties, which are one-third filled by technicians today, or job positions—from lack of highly skilled machine-tool operators or construction workers.

In conjunction with the directive organs, USSR Gosplan, USSR Goskomtrud [State Committee for Labor and Social Problems] and other departments, we must considerably strengthen the continuity of the system, expanding its capabilities for the training of technicians in reduced time periods from among the youth that have completed secondary technical and vocational institutions, and engineers from among the graduates of secondary special educational institutions, and carry out a review of standard and sector job descriptions that are subject to substitution with middle-range specialists, reconsider the correlations of specialists with higher and secondary special educations in a differentiated manner for each sector in planning the training of personnel, put into practice long-term forecasting of changes in the professional-qualifications structure of personnel as an

essential constituent element of forecasts of the development of the sectors of the national economy, establish categories for technical duties depending on the nature of the work and specify a list of work professions in the higher ranges.

Order cannot be instilled in the correct utilization of specialists without devising a new planning mechanism for the training and distribution of specialists and without strengthening and accounting for regional requirements and interests in it. I feel that the gosplans and ministries of education of the union republics should be charged with developing territorial plans for the training and distribution of specialists with a regard not only for local requirements, but also for the needs of union- and union-republic-subordinate enterprises; the certification of educational institutions should also be introduced. This would make it possible to eliminate parallelism in the training of specialists in one and the same specialties and the squandering of material and labor resources along with the creation of the preconditions and actual conditions for strengthening educational institutions.

A radical change in the structure of middle-range specialists' training is projected in the course of restructuring. This is one of the cornerstone provisions of the realization of the Fundamental Areas. A differentiation of the time periods for the training of specialists and the content of their training depending on the type, complexity (skill level) and priority of the specialty and the level of general educational preparation, along with the assurance of a certain turn in favor of the dedicated selection of youth for training in technical institutes and academies, within sensible limits is being proposed. The ultimate goal facing every pedagogical collective and that should be reflected in the curricula and skill descriptions are:

—first, organizing the training of specialists able quickly to adapt and fulfill creatively the functions of technicians and process engineers, designers, quality-control foremen, labor technicians and engineers' assistants in production and scientific workers in scientific research institutes in various capacities and jobs that require special training in a particular skill, as well as forming practical knowledge and skills that surpass, as a rule, higher-educational training. This task can be resolved successfully only under conditions of close integration of training and production and the training of technicians on the specific socio-economic order of the enterprise (association);

—second, organizing training, new to the system, of technician organizers able to manage teams, fulfill the duties of foremen, shop and shift chiefs, i.e. the technical institutes are facing the task of reproducing on a broad scale the managers of the basic levels of production from among the leading workers that have experience in practical work. This critical task is reflected in the Fundamental Areas;

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—third, organizing the training and re-training of specialists associated with the substitution of new equipment and technologies in production, i.e. in those areas that are objectively leading to the need to utilize technicians as the immediate executors of the functions of operation, maintenance, testing, diagnostics and repair of modern equipment. The discussion concerns a large group of technician operators for industrial robots and manipulators; middle-level technical personnel employed in flexible automated systems and the programming of technological and other processes; highly skilled personnel working with various types of laser equipment and the production of catalysts. The intensification of the industrial complex is expanding the demand for specialists who are called upon to master new agricultural equipment, automated micro-climate regulating systems, incorporating computers into feed production using biological and thermochemical methods etc.

These tasks will have to be resolved on a materially renewed training and didactical basis with the active utilization of modern computer technology, simulation and business gaming, technical creativity and the independent work of the students. For the purpose of eliminating the existing gap between the level of specialists' training and the needs of social production, we must envisage a whole set of measures for creating a modern material and technical base of offices, laboratories and training shops and eliminating the substantial shortcomings in the practical training of specialists. Creating conditions for real work at workplaces related to the specialty selected in laboratories, shops and in production will make it possible to raise the quality of the training of technicians appreciably.

It is essential to restructure the mutual relations of technical institutes and trade schools with the enterprises, associations and institutions of the national economy in the interests of effectively realizing these tasks. These relations should be developed based on cooperative agreements that envisage an increase in the mutual vested interest and responsibility of economic sectors, scientific institutions, higher-educational institutions and technical institutes both in improving the quality of instruction and in the communist education of the specialists. The secondary special schools should be actively included in organizing scientific-production-training complexes, regional centers and specialized training subdivisions for production, as well as developing such forms of training institutions as the "technical-institute enterprise."

It will ultimately be necessary to create and fine-tune an efficient organizational economic mechanism for the interaction of secondary special schools with all the sectors of the national economy in the course of expanding the integration processes.

This would ultimately also be facilitated by the assignment of base enterprises to the secondary special educational institutions based on corresponding provisions as

approved by the directive organs, the expansion of the network of training and production enterprises and economically accountable [khozrashchetnyy] shops and the assurance of a combination of production training with productive labor.

Moving to the forefront of the topical problems in the development of secondary special education in the 12th Five-Year Plan and to the year 2000 is the problem of accomplishing radical changes not only in the structure of personnel training, but in the very content of the activity of our schools and their mutual relations with production and science. The discussion concerns defining a new view of the nature and forms of organization of the training and educational process at technical institutes and academies. This should moreover be done not from the position of "evolutionary renovation," "improvement" or "raising" the level or quality of specialist training and other such lulling phrases, but rather from the party positions contained in the Fundamental Areas. "The role of the secondary special school in training the middle-level personnel needed by the country has been unjustly diminished," the document states, "and its place in the changing conditions of contemporary production and the system of professional education has not been clearly defined."

The Teaching Methodology Administration and the Scientific and Methodological Office for Secondary Special Education, along with the sector ministries, have completed the first stage of work associated with creating the basic tenets defining the makeup of the specialties on the new list.

Why has the need for a review arisen? A sign of the times? Or is there really a fundamental and objective need for it?

We will consider this problem based on the example of a small-scale analysis. The list published by USSR Minvuz includes about 500 job descriptions. There are in fact many more than this through specialization and specialties, according to the plans for which experimental training is conducted or the individual training of specialists is arranged.

The extant situation is the result of many years' practice in the unimpeded opening of the training of specialists for the needs of the current times at the requests of individual ministries and departments. It is an objective process, but the results are such that the list has become a conglomerate of specialties that frequently includes functionally obsolete ones, both "large" and "small," and sometimes even "extinct" ones.

It could be said that for the majority of the specialties, small-scale series training of specialists is being carried out with all of the consequences arising therefrom: a process of increase in the cost of training is occurring, the support of secondary special institutions with methodological program literature is becoming more difficult

and the number of multiple-field technical institutes is increasing. All of this has a negative effect on the possibility of creating a solid material and technical base that would ensure high quality for personnel training.

A restructuring of the educational-training process is impossible without a radical departure from the concepts of the extant system of developing curricula, teaching programs, textbooks and their content and the structure and organization of the whole educational process. We have in effect about 2,000 curricula and 10,000 teaching programs. All of the teaching plans are reviewed and approved by the Teaching Methodology Administration of USSR Minvuz. One can see how stagnant the current system of secondary special educational is, and under these conditions a rapid and functional reworking of teaching methodology documentation is naturally almost impossible and the task of continuously reflecting the requirements of scientific and technical process in personnel training is not optimally resolved. It is quite clear that the former approach to forming the content of the education has outlived itself.

I feel that it is expedient to divide the spheres of influence on the content of the curriculum into three areas: USSR Minvuz, the sector and the educational institution; the new curricula must include a fixed and a variable portion.

The sector organs for the administration of training institutions should be charged with responsibility for the variable block of the disciplines being described, including production training. This portion will take up no less than 35 percent of the overall time allocation.

The administration and the instructors of the technical institute (academy) bear complete responsibility for the quality of the training of specialists, and they have extremely limited rights to improve the teaching methodology for supporting the teaching process.

The USSR Minvuz order "Expanding the Rights of Pedagogical Collectives of Secondary Special Educational Institutions to Improve the Teaching Process" is aimed at correcting this situation. Its realization will make it possible to renew in timely fashion the content of the special training of the students. At the same time, it places responsibility on the curriculum commission chairmen and the instructors of special disciplines for the professional training of personnel.

The right of partial renewal of programs in special disciplines that has been granted (up to 15 percent) will serve as an effective tool for the qualitative reworking of the programs of the teaching methodology offices, as well as making possible an economy of resources for their re-publication.

Among the didactic priorities for modernizing the teaching process can be cited:

1) the material reinforcement of the professional and applied section of secondary specialized education. For these purposes, a more precise elaboration of the amount of training in several general technical and general educational disciplines (mathematics, physics, chemistry, electrical engineering etc.) depending on the field and qualifications of the specialist;

2) a strengthening of the training of technicians as the managers of the primary levels of production. For these purposes, I feel that it would be expedient to include in the curriculum disciplines (sections) that make up the psychological, pedagogical and administrative knowledge and skills of future specialists. The administrative cycle of the disciplines is considered a general specialty for the technician-organizer;

3) radical changes in the fixed structure of the teaching process via a reduction in descriptive types of teaching. They should be supplemented with practical, laboratory and independent types of work by students along with the broad utilization of active forms of training: business gaming, simulations of production situations, and realistic course and degree planning at the basis of which are actual production topics;

4) the rejection of a leveling approach to the training of personnel, an expansion of the rights of technical institutes to determine the content, forms and methods of organizing the teaching process, first and foremost for taking into account the specific requirements of those enterprises and organizations where the future specialists will be working;

5) the foundation of the newly created system of training is competitiveness of the students in academic work. Exactingness of the young students for the quality of their knowledge must be raised considerably. A condemnation of "percentomania," which has flourished in the technical institutes as well as the schools, makes it possible to free the pedagogical collectives from the fear of being numbered among the bad ones and raise exactingness and responsibility in the evaluation of knowledge.

We have many interesting and experienced teachers that work creatively. The list of their names is large. We see an innovative approach to the matter in many educational institutions, and it is knocking at the door and should be summarized. Unfortunately, this is being done poorly. Great blame here can be placed on the managers of the Teaching Methodology Administration, the Scientific Methodological Office and the State Inspectorate of USSR Minvuz. It is essential to create a continuous system for the study of leading experience. This is a matter for all of the ministries of education of the union republics and the sector ministries. USSR Minvuz should carry out coordinating and publishing work.

The restructuring of secondary special education assumes serious changes in organizing the monitoring and inspection of the educational process. It is necessary to eliminate the spirit of revisionism and the "administrative-pressure" style of work of the inspectional workers, and they are called upon to ask not so much Why? Who permitted it? and Does this correspond to existing norms and directives? as they are constantly to assist instructors and managers with skilled advice: what should be incorporated, where the leading experience is located, and how the situation must be changed for the better.

One cannot approach the oversight of instructors today from one point of view—whether their lessons or lesson plan correspond to the operative academic programs. The instructor should not be strictly regulated in relation to the selection of the technique for propagating knowledge or have cliches in the form of outdated and conventional scenarios foisted upon him.

If we continue to approach the matter in this fashion as before, we will not be catalysts for the acceleration of restructuring, but rather a drag on it. It seems to me that in this regard we should not simply correct, but rather cardinally alter the nature of the programs for inspection and monitoring in the direction first and foremost of the actualization of knowledge, the eradication of simple presentations of information in instruction along with the principle of "I talk and you listen."

After all, the instructor that knows his subject well frequently tries to alter the course of the classes and introduces the necessary corrections in the teaching program that reflect the latest in equipment and technology and alters the correlation of the theoretical and practical classes. But in this case he risks being punished by the monitoring organs for digressing from the program and the omission of certain subtopics and topics. If we approach the essence of the matter, the actions of this instructor should be supported as creative and timely.

The currently extant structure of the administration of secondary special education in the country requires serious restructuring. We have many small fiefdoms of technical institutes and trade schools in which there are actually no workers or subdivisions that are able to accomplish the skilled leadership and monitoring of the content of personnel training.

The scientific research institutes of the USSR Academy of Sciences, USSR Gosplan, USSR Goskomtrud, sector ministries and departments, the USSR Academy of Pedagogical Sciences, the All-Union Council of Trade Unions and the All-Union Komsomol Central Committee should be involved in the scientific research of problems in the higher and secondary special schools. It is furthermore essential to resolve a series of issues that have not been considered for decades, but have fundamental significance for the development of secondary

special educational institutions, and the time has especially come for the issue of changing the status and raising the role of the Scientific Research Office for Secondary Special Education.

Restructuring should also include the circle of problems that defines the all-round development of the material and technical base of the secondary special educational institutions, which brook no criticism, especially in the sphere of maintenance. In the Far East, where an expanded joint collegium of the USSR and RSFSR Ministries of Education was recently held, the Teaching Methodology Administration and the State Inspectorate were acquainted with the work of a large number of technical institutes (trade schools) in advance. Many of them are in a pitiful state. Out of 16 medical institutes in this region, for example, 10 today have a teaching area per student of less than 4 square meters (and considerably less in Blagoveshchensk, Ussuriysk and Khabarovsk). A number of cultural and enlightenment educational institutions are in the same state.

The solution of the problems of reconstruction, expansion and new construction depends largely on the persistence and sagacity of the administrative organs of secondary special education.

A turnaround cannot be achieved if the sector does not have a prospective plan and targets, approved by the collegium, for the construction of educational institutions for the next two or three five-year plans. We must proceed in forming these targets not from what they will give, but rather how much is needed to bring this base to the stipulated standards. This plan should also include the specific construction of teaching and laboratory wings, dormitories, cafeterias and gymnasiums. It is essential to consider the reimbursement of expenditures by the sectors that receive personnel according to cooperative training plans. This compensation should moreover, in my opinion, proceed not only through the limits of capital investment, but also through the funds for the material and technical supply in the form of computer equipment, machine tools, instruments etc.

Raising the level of activity of secondary special educational institutions, making restructuring more active and able to resolve such issues as imparting financial and economic independence to the managers of secondary special educational institutions, granting the right to approve the structure and makeup of the teacher-support and administrative-management personnel, the resolution of issues combining professions (duties) within the limits of the established fund for wages and staffs, the use of funds allocated for the upkeep of educational institutions, without line-item expense breakdowns, aside from the wage and stipend funds—all of these problems, under the conditions of the incorporation of a new economic mechanism for the operation of enterprises and institutions, must be resolved, since it is namely they that will make it possible to protect the

executives of educational institutions from a multitude of violations, which they must commit, in order to maintain the essential order in the collectives.

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## DEMOGRAPHY

### Population Projections, Statistics, Comparisons Presented

#### Demographic Indicators

18280003 Moscow NEDELYA in Russian No 37,  
14-20 Sep 87 p 20

[Article by Valeriy Yelizarov, candidate of economic sciences: "150,000,000"; first four paragraphs are NEDELYA introduction]

[Text] Dmitriy Ignatyevich Valentey, director of the Population Center of the Faculty of Economics at Moscow State University, telephoned the editorial department:

"Do you know that a distinctive anniversary is approaching? The 150 millionth girl will soon be born in the country."

No, we did not know! We knew that in the middle of this year the earth's population reached 5 billion. The United Nations Organization symbolically declared 11 July 1987 the day of birth of the 5 billionth man. UN Secretary General Perez de Cuellar, who was in Zagreb on that day, proclaimed, of course, also symbolically, the Yugoslav newborn baby Matej Gaspar the 5 billionth inhabitant of the earth.

And now there is our own anniversary. We asked two scientists to comment on this event:

The title of this article—"150,000,000"—coincides with the title of the well-known poem by V. V. Mayakovskiy written in 1919-1920. "150,000,000 speak with my lips" the poet exclaimed on behalf of the entire population of revolutionary Russia. Of course, he could only approximately imagine how many millions "is the name of the master of this poem." After all, the first Soviet population census was conducted only on 28 August 1920 and, besides, not in all territories. At that time the country's population totaled less than 137 million. Losses during the civil war and the intervention, from the hunger and epidemics caused by them, were reflected in this. Our country's entire population reached 150 million only at the end of 1927. And now after almost 60 years we observe the birth of the 150 millionth female inhabitant of the USSR.

Vladimir Gelfand, docent at Perm State University, was the first to draw the attention of Soviet demographers to this. According to his calculations presented in his report

at the All-Union Seminar on Population in Yoshkar-Ola in June, this event was expected in late fall. However, the recent publication of the data of the USSR State Committee for Statistics on the country's population on 1 July 1987 made it possible to make certain corrections in its forecast.

Where and when was (or will) she be born? I will answer with V. Mayakovskiy's words from the same poem:

"Comrades journalists, don't try to find out precisely..."

In fact, it is impossible to precisely determine the date and place of birth of the "jubilarian." Our knowledge of the size and structure of the population is always approximate, despite the fact that population censuses are conducted regularly and a current record of births, deaths, marriages, divorces, and migration is kept. An error, even if small, is inevitable. We will perhaps be able to learn how precise present calculations are only after the next all-Union population census, which will be conducted in January 1989. Incidentally, the publication of data on the country's population census to an accuracy of one person is also the tribute of tradition rather than a real evaluation of the possibilities of modern statistics.

I will cite several figures disclosing the dynamics of demographic indicators.

On the average, about 5.4 million children were annually born in the country recently. There are 105 or 106 boys per 100 girls, on the average. The population growth was as follows: in 1983—2.6 million people; in 1984 and 1985—2.5 million per year; in 1986—2.9 million. The biggest growth has occurred in the last 20 years! During the first half of this year the population has increased by another 1.4 million, reaching 283.1 million by 1 July. The monthly growth exceeds 200,000 people. This means that today there are about 283.5 million of us and the female population has reached 150 million. This is approximately 17 million more than the number of men.

As before, the demographic echo of the war is basically the reason for such a big preponderance. At the end of the last century, in 1917, according to the data of the first all-Russian population census, the excess of the number of women was small—only 600,000. In 1926 it reached 5 million—this was the result of world and civil wars. Usually, preponderance should not grow during peacetime. However, in 1939 it nevertheless amounted to 7.9 million. Of course, the country's male population suffered the main losses during the years of the Great Patriotic War: Men constituted the overwhelming majority of the more than 20 million people who died. Thus, according to the data of the first postwar population census, in January 1959 in the ages of 35 to 59 (years of birth 1899-1923), which bore the main brunt of the

war) the preponderance of women comprised 13.1 million and in older ages, another 6.4 million. At the same time, in young ages—under 31—the male population exceeded the female population by 240,000.

Excess of the Number of Women Over the Number of Men in the USSR

Years Million people	1940 8.1	1950 21.7	1955 21.4	1960 20.6	1965 19.8	1970 18.918.3	1975 17.7	1980 17.1	1985
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It can be assumed that somewhere at the beginning of the 21st century there will be more than 160 million women per 150 million men (there is time to prepare ourselves for the anniversary!). Possibly, a reduction in this gap will occur somewhat more rapidly, because older generations with a two- or threefold preponderance of women will gradually depart from life. The "superdeath rate" in men (in middle age it is two or three times higher than in women) and, as a result, the shorter forthcoming life span—death rates in 1984-1985: 63 years in men and 73 in women—still hinder the process of equalization of the sex structure. True, after the adoption of measures to prevent drunkenness and alcoholism the situation has improved somewhat. The death rate, especially owing to accidents and injuries, decreased and men's life span increased by a whole year. For the time being, however, we are far from the best world rates.

A few words about the present social and demographic portrait of 150 million Soviet women. They make up 53 percent of the country's total population. In the RSFSR, the Ukraine, and Latvia their proportion is higher than the average and in Central Asian republics, Armenia, and Azerbaijan, lower. A higher proportion of men in the population also corresponds to the higher birth rate. Among workers and employees women make up 51 percent. At the same time, in trade, public dining, public health, physical culture, and social security they comprise more than 80 percent and in public education and culture, about three-fourths. Women make up 60 percent of the specialists with higher and secondary specialized education. Among students at higher educational institutions women comprise 55 percent and among students at secondary specialized educational institutions, 58 percent.

Women's average forthcoming life span is 73 years—alas, 1 year shorter than in the early 1970's. Well, women should also give serious thought to improving their way of life.

The number of women of reproductive ages (15 to 49) is about 70 million. In 1985 a total of 2,180,000 women got married for the first time, including 81.3 percent under the age of 25 and 12 percent at the age of 25 to 29. About 538,000 got married for the second time, including 40 percent under the age of 30.

By the next census on 15 January 1970 preponderance shifted to older ages, but in ages under 43 inclusive there were 168,000 more men than women.

I shall present a small table.

Excess of the Number of Women Over the Number of Men in the USSR

Years Million people	1940 8.1	1950 21.7	1955 21.4	1960 20.6	1965 19.8	1970 18.918.3	1975 17.7	1980 17.1	1985
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It is interesting that the number of women in the USSR first reached 100 million in 1939, then declined during the war years, and again reached 100 million at the end of 1949. A total of 15.3 years were needed for the female population to increase from 100 to 125 million (April 1965). But the "path" from 125 to 150 million took 1.5 times longer—22.4 years. Whereas in 1955-1965, on the average, the country's female population increased by 1.6 to 1.7 million, in 1966-1985, by only 1.0 to 1.2. This was the result of the reduction in the rates of growth of the population and of the decline in the birth rate and in the number of children per family.

In the last few years (1983-1986) the number of women in the USSR has increased as follows:

in 1 month, by 100,000 to 105,000; in 1 week, by 22,000 to 24,000; in 1 day, by 3,200 to 3,500; in 1 hour, by 135 to 145; in 10 minutes, by 22 to 24.

We will try to sketch the most probable "distinguishing marks" of the 150 millionth female citizen of the USSR. She was (or is just about to be) born, most probably, in the European part of the USSR, where 72 percent of the country's population lives and where, despite the lower birth rate, more than one-half of the newborn babies come into the world. It can be assumed that she is the first child in the family. After all, firstborns constitute a statistical "fashion" among newborn babies—on the average, they make up more than 40 percent in the country and more than 50 percent in republics with a low birth rate. We will think that she is a city resident, because 66 percent of the population now lives in cities.

Perhaps she is a resident of Moscow? Well, the probability that the capital, a city with almost 9 million people, is her place of birth is not so small.

About her demographic future. First, the jubilarian and her contemporaries are lucky as far as grooms are concerned. The point is that the average statistical groom, who should be a little older than the bride, has already been born and, moreover, in the most numerous postwar generation of boys. Thus, she will have more opportunities for a choice than brides born in the 1970's and in the early 1980's.

Second, I would like to believe that her life span will be 75 to 80 years, so that, possibly, she will also live through the 100th anniversary of man's flight into space and the 150th anniversary of the Great October.

In conclusion a little more statistics.

In the 10 minutes that you spent on reading this material 100 to 150 people were born, including 49 to 51 girls and 51 to 54 boys.

Every 12 seconds a girl is born in our country. Who is the 150 millionth?

### Population Statistics

*18280003 Moscow NEDELYA in Russian No 37,  
14-20 Sep 87 p 20*

[Article by Vladimir Gelfand, docent at Perm State University imeni A. M. Gorkiy]

[Text] On 1 July 1987 the USSR population totaled 283.1 million. There is no doubt that at the beginning of 1988 the number of our country's residents will be close to 284.5 million.

According to calculations, the 300 millionth inhabitant of the USSR will appear in February 1996.

The 350 millionth, in the first half of the year 2027.

The 100 millionth woman appeared in the USSR in November 1949.

The 100th millionth man appeared in the USSR at the end of January 1962.

The 150 millionth woman, in September 1987.

It can be assumed that the newborn girl, who came into the world in Moscow's biggest maternity hospital shortly after sunset on Monday 15 September 1987, became the 150 millionth female citizen of our homeland.

The 150 millionth man will appear in the USSR in August of the year 2004.

If the total population at the end of 1987 is taken as 100 percent, the proportion of men comprises 47.1 percent and of women, 52.9 percent. There are 1,123 women per 1,000 men and 891 men per 1,000 women. At the same time, in the total number of individuals, whose age ranges from 0 to 37 inclusive, male preponderance is equal to 2.1 million. It turns out that now there are more grooms than brides. If the population of 38-year old individuals, then of 39-year old individuals, and so forth is added to the number of men whose age ranges from 0 to 37, male preponderance begins to decrease and with the addition of the number of 54-year old individuals male preponderance is replaced with female preponderance.

In the able-bodied group (16- to 59-year old men and 16- to 54-year old women) there are 928 women per 1,000 men and in the group of individuals of the pension age (60-year old men and older; 55-year old women and older) there are 2,893 women per 1,000 men. It turns out that there are three grandmothers per grandfather.

In the total population the Soviet generation (that is, individuals born in 1918 and later) makes up 93.6 percent and the proportion of the postwar generation (that is, those born in 1946 and later) is equal to 66.4 percent.

The average age of the population is 33.4, including that of men, 30.7 and that of women, 35.3. The average age of a person of an able-bodied age is 35.1 and that of a person of a postable-bodied age, 68.4.

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## RAIL SYSTEMS

### Call for Creative Approach to Modeling Process *18290023 Moscow GUDOK in Russian 23 Oct 87 p 2*

[Article by Yu. Timokhin, candidate of technical sciences: "The Price of 'Resistance': A Creative Approach to Modeling the Shipment Process"]

[Text] The subject of interruptions in the work of the transportation industry in general and of the railroad industry in particular has grown so much "stronger" on the pages of newspapers that in essence it has become an overseeing duty. Evidently it is for this reason justifications have also become commonplace — it is said that capacity has been exhausted in many freight-intensive sectors, which also hinders the growth in shipments.

At first glance, the situation looks like this — the most important routes actually are overloaded. Unarguably it is also necessary to build roads, additional routes, to electrify lines and to more extensively utilize modern technical resources. But this is an expensive and long-term proposition. However, the opinion has taken root that shipments must be increased today.

Is this necessary? The question is not superfluous. After all, increases are to a large degree the result of planning "according to what has been achieved." What does this result in? Primarily in the fact that the last "base" is included in plan volume. But this includes both inefficient and chance shipments as a result of, let us say, accidents and natural calamities and errors in the organization of shipments.

For example, almost one-third of the turnover time for railway cars is eaten up by above-the-norm idleness in expectation of processing. This idleness is most often the result of the lack of coordination between the operations of railway workers and the clientele and the uncontrolled overloading of transportation capacities.

The main reason for idleness and interruptions is the practically undirected development of railway car traffic. The number of addresses of these cars is extremely theoretical — "appointed routes." But each line has up to 550 loading stations and up to 100 divisions. Fewer than half of shipment plans have a specific address — only an internal railway address. This does not permit us to "play it out" on the computer ahead of time — to model forthcoming shipments with a consideration of capacities on the route that is being followed.

The results of such a "to grandfather's village" type of planning are already being felt today. "Tomorrow" the economic reform that has begun will aggravate the negative manifestations.

The process of optimization of the economy already provides very symptomatic examples — consumers are rejecting orders and shipments of technology that do not

satisfy them. With increased reforms the process of selectivity of products being used will unavoidably increase. This will have an effect on the reexamination of ties between suppliers and consumers not only in terms of quantity, but individually as well.

All of these changes will affect the rails in the full sense of the word, will have a direct effect on plans to ship freight and on the volume of car traffic, the amount of movement, the capacities of technical resources and the forms and methods of utilizing these resources. The degree of coordination of shipment plans and ongoing processes of economic improvement occurring within the country will determine the success of the work of railroad shipping.

Of course in the final analysis the economy will put everything in its place — inefficient, let us say, long-distance shipments will evidently not be advantageous for enterprises under cost-accounting conditions. Shipping as a part of wholesale and especially of contractual prices will evidently make it a "priority" for curtailment. Following that there will be curtailment of hidden non-effective shipments — the results of cooperation and specialization that have not been thought out, when coats are shipped around the world, so to speak, to sew on the buttons.

The situation is more difficult as concerns counter-shipments resulting from departmental strip farming. But I feel that even they will be crowded out by cost accounting.

So it is time to think not about increasing the volume of shipments but about bringing order to shipping and optimizing it. We need an instrument that will allow us to analyze the carrying-out of shipments and to eliminate the chance and the alien from them.

Direct accounting is essential, and not a single type but in several variants for different types of shipments. Moreover, there should be a measuring instrument detailing the volume of shipments by enterprise, which would achieve the search for effective forms of operating the means of transportation and loading. This type of multi-variant modeling will enable us to optimize shipments, to select the most advantageous (depending on established criteria and existing capacities) route, and to decrease to a minimum unproductive expenditures.

But right now we do not have an effective instrument for planning shipments. We do not have satisfactory scientific studies on modeling the shipment process. As you can see, in the near future we cannot expect noticeable results within this sphere from the development of ASUZhT [Automated System for Controlling Railroad Shipments], which has dragged on for the last 15 years.

Moreover, as long ago as 1984 a creative group of engineers developed an automated system for calculating network load — ASRZS — on their own initiative,

which was earmarked for modeling the shipment process. This system encompasses the sum total of all operations for the complete cycle of the car's turnover. This kind of information model enables us to obtain data about the loading of all objects within the transportation system and about the work being done according to a single shipment plan. This creates the foundation for the development of a detailed accounting of shipments.

We have the opportunity to calculate the volume of essential shipment capacities and capacity of passage in every section and network and to make up different variants of shipment plans with small outlays of time and capital.

This system has undergone experimental operation. Already at the first stage the results of machine calculations showed which sections of the network must be strengthened. And, in the reverse case, previous calculations regarding some costly measures were refuted. Thus, instead of the previous variant of development involving the Center-Kavkaz costing 900 million rubles a second, less costly variant has been proposed.

On the basis of the "Sistema" research we were able to precisely determine the structure and function of levels of management of railroad transport and the structure and composition of information of the dynamic model of shipment control.

It would seem that we should bring it up to condition as quickly and possible and to put it on track. But from the very beginning the developers have come up against serious objections on the part of the workers of the Main Administration of Transportation as well as of a number of other organizations. Here assurances have been made that planning assignments were ready and in industrial operation within GVTs [Main Computer Center], MIIT [Moscow Order of Lenin and Order of the Labor Red Banner Engineering Institute of Railroad Transportation] and IKTP [Institute of Complex Transportation Problems], and for the far-fetched reason of "inadmissibility of duplication" work on the Sistema was stopped. The "confrontation" has been going on for 3 years now. But as of yet calculations of either an equal or alternative nature have not appeared. Promises are being made that the first results of "leading" research projects will be available only in 1990. Yet we had them in 1984.

Three years of senseless delays! This would have been enough time to fully complete elaborations and to obtain comprehensive optimal recommendations on the development of transportation to the year 2005.

Here is a reasonable question. Let's say that the people in the glavk feel that our idea is not promising, why not set up a competition of ideas? We proposed the creation of a temporary scientific-technical board that would show the Sistema in action. We undertook to prepare and introduce four specific tasks on the level of MPS [Ministry of Railroads] and railways within 6 months. This

included a monthly analysis and evaluation of completed shipments according to the efficiency of interstation ties for 246 types of freight, their routing as well as an evaluation of loading of sections of the network in volume of car traffic. During the next 6 months we were ready to provide monthly calculations of plans to ship freight and empty cars detailed up to the point of dispatcher sections and networks.

This would have permitted an objective evaluation of Sistema — is it an emperor without clothes or an effective planning instrument? Competition, the competitiveness of ideas — here was a dependable means away from someone's individual or group ambitions. Nevertheless, A. Chernyugov, deputy director of the transportation glavk, again refused to have a competition for the far-fetched reason of "economizing on resources and duplication."

The Sistema is an instrument for direct calculation of shipment plans. It will allow us to model the entire transportation cycle and to obtain the information model for the specific shipment plan — a type of draft of statistical accounting concerning the measurement tools and indexes of work of transportation subdivisions. It will give transportation subdivisions the practical opportunity to independently build variants of operations and investment plans which are balanced throughout the network and which meet the demands of complete cost accounting and self-financing.

We are "throwing down the gauntlet" to researchers of any alternative system. Let's solve the same tasks on a parallel basis and see who is most successful. May the best man win.

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**Restructuring Reaches Rail Transportation**  
*18290019b Moscow TEKHNIKA V SELSKOM KHOZYAYSTVE in Russian No 10 Oct 87 pp 9-11*

[Article by V. I. Dobovik, deputy chief of the Division for Mechanization and Electrification of the USSR Gosagroprom: "Restructuring of Industrial Rail Transportation of the USSR Gosagroprom"]

[Text] A radical transformation of the material and technical base is being carried out actively in the country's agroindustrial complex today, and a deep restructuring of production is being conducted on the basis of scientific and technical progress, which is linked to the considerable increase in the volumes of transportation shipments.

Each year more than 110,000 enterprises and organizations of the USSR Gosagroprom load and unload 10-11 million cars on railroads for common use or on their own sidings, which is an average of about 30,000 cars a day.

This requires of transportation services of the USSR Gosagroprom efficient organization of their work for prompt handling and delivery of cargoes, reduction of nonproductive idle time of cars, and reduction of the cost of shipments.

The industrial rail transportation organization of agroprom is one of the largest in the country. It has 9,500 kilometers of sidings. There are 138,000 people employed in internal shipments and loading and unloading work.

Created on the basis of the transportation shops of enterprises of ministries and departments included in the USSR Gosagroprom, industrial rail transportation inherited from them all the problems and shortcomings that had accumulated over the years.

In its structure there is a large proportion of small technical units, whose technical supply falls considerably below modern requirements and there is a shortage of warehouse facilities. Moreover, in the majority of cases in the local areas they have abolished the previously existing system of organization and control over the course of loading and unloading cars, and when forming the new management structure they have underestimated the role of the organization of rail shipments.

All this has led to a situation where there have begun to be interruptions in the industrial rail transportation of the agroprom. The average number of cars not loaded during the established time periods has increased to 2,000.

The nonproductive idle time of the rolling stock has had a negative effect on the quality of the cargoes that are delivered and caused certain difficulties in the work of the railroads, especially in providing cars for the dispatching products, and it has made it necessary to bring in additional labor force to handle cars waiting to be unloaded.

The need to improve the utilization of railroad cars made it necessary for the USSR Gosagroprom to take effective organizational and technical measures. Last year in the union and republic gosagroproms and a number of oblast agroproms structural subdivisions were created for organizing rail shipments. At the rayon level, the changeover to centralization of work for unloading cars and bringing cargoes from the railroad stations is already clearly in evidence. The level of mechanization of transportation shops of enterprises is rising. Integrated railroad businesses (OZhDKh) and interbusiness industrial rail transportation enterprises are being created on the basis of small shops, and at the railroad stations they are creating transportation expediting services of automotive transportation enterprises of the RAPO. Here are a couple of examples.

The transportation shop of road-construction PMK No 51 of Gomel Oblast ships inert materials on an elevated railroad track equipped with a traveling gantry crane with a set of auxiliary equipment (a mounted vibrator, a DP-6S vibrator-loosener) and two pneumatic hatch openers. The application of this equipment in 1986 made it possible to unload about 7,000 cars without manual labor and to reduce the normative amount of idle time of cars by 0.3 hours.

The Krasnogvardeyskoye interbusiness industrial rail transportation enterprise in Crimean Oblast has a siding that is 3.5 kilometers long and a warehouse that will hold 720 tons of cement, 6 bulldozers, 2 loaders, an excavator, a T-150 tractor, and other equipment. During 1986 the enterprise dispatched about 1.5 million tons of cargo for 42 kolkhozes and sovkhozes. This year it is intended to organize centralized shipment of cargo by automotive transportation, which will make it possible to free the farms of all of this work.

The Slutsk OZhDKh in Minsk Oblast has a siding 2.5 kilometers long, 2 steam engines, 228 cars, and 30 hopper-cement cars. The service personnel of this association (58 people) carry out the selection and placement of the cars of the Ministry of Railways fleet on the loading and unloading fronts as well as the cleaning of them. They also form the rotations of cement cars and flat cars for shipping construction cargoes to enterprises and organizations of Belselstroy. During 5 months of 1987 the rail transportation of this OZhDKh shipped 410,000 tons of inert materials and 1,400 tons of timber.

A number of enterprises of the Gosagroprom of the Belorussian SSR have developed and introduced differentiated rates to pay for the work of loaders which provide incentive for reducing the time taken to load cars. Conditions have been developed for socialist competition of brigades. Thus at the Bykhov cannery plant in Mogilev Oblast, for loading a car full of glass jars in 8 hours the rate was set at 1.76 rubles, but in 5.25 hours it was 3.50 rubles. The brigade of loaders that takes first place is awarded monthly bonus of 30 rubles.

The transport expediting service of the Novozybkov Agrotrans transportation enterprise in Bryansk Oblast, under agreements with 27 kolkhozes and sovkhozes of the rayon, checks off cargo addressed to them at the railroad station and provides for centralized delivery of these cargoes with its own automotive transportation. The railroad cars are unloaded with the station's equipment, and the trucks are loaded using mechanisms belonging to the transportation enterprise. During 1986 and 5 months of this year, more than 40,000 tons of peat, brick, gravel, timber, and reinforced concrete items were delivered to the farms. This made it possible to reduce transportation expenditures on shipping cargo by more than half and—the main thing—each day to release up to 20 vehicles and also the loaders and expeditors from the

farms. At the present time in the RSFSR Gosagroprom transportation-expediting services are functioning at 62 stations with more than 200 tons of cargo arriving each day.

Seminars and critiques have been conducted concerning the state of the utilization of railroad cars and trips made by specialist to the local areas to render assistance. Daily information has been introduced concerning the condition of the loading and unloading of the cars.

As a result of the measures that have been taken, there has been a considerable reduction of the number of unloaded cars belonging to enterprises and organizations of the gosagroproms of the Lithuanian and Latvian SSR's and a number of oblast (kрай) agroproms of the RSFSR, the Ukrainian SSR, and the Kazakh SSR. On the whole for the USSR Gosagroprom during January-May 1987, the average daily residuals of unloaded cars dropped by 40 percent, and the average amount of idle time of a car during unloading—by 0.4 hours. The plan for loading cargo was fulfilled.

The work experience of the gosagroproms of the Belorussian SSR and the Estonian SSR showed that with skillful utilization of the existing production base of the transportation shops of enterprises and organizations, working in close contact with railroad administrations and divisions, it is possible to completely eliminate above-normative idle time of railroad cars during unloading.

But the restructuring of the mechanism of industrial rail transportation in a number of republic agroproms is still not even in the initial stage. They are not doing planned work here for enlarging the service for rail shipments. We are speaking

not about restoring the unbroken chain for transferring orders and instructions from above to below, to the local areas, but about creating a staff for rail shipments, one of the major tasks of which would be concentration and effective utilization of existing forces and funds for accelerating the unloading of cars and introducing new technical equipment and progressive technologies.

Many managers try, as they did before, to solve problems in the development of industrial rail transportation through old, outdated administrative methods.

The RAPO and a number of oblast agroproms have no specialists in organizing the work of transportation shops and interbusiness enterprises of industrial rail transportation. The many years of experience in providing for prompt loading and unloading of cars, which has been accumulated by enterprises and organizations of the system, is being assimilated extremely slowly. Even the transportation-expediting services that have proved their effectiveness are not being properly developed. It is the lack of development of the mechanism for management of the railroad service that is one of the major

reasons why the amount of unproductive idle time of railroad cars at enterprises and organizations of these agroproms is not decreasing, but increasing. Thus in the gosagroprom of the Uzbek SSR, the average amount of idle time of one railroad car during unloading is almost twice the established norm, and residuals of cars that were not unloaded promptly in May increased by more than 40 percent as compared to April of the preceding year. The situation is similar in a number of oblast agroproms of the RSFSR, the Ukrainian SSR, and the Kazakh SSR.

Today it is quite clear that improvement of the utilization of the cars requires the adoption of concrete practical measures for improving the structural forms of organization of rail shipments.

The work for increasing the effectiveness of industrial rail transportation of the USSR Gosagroprom system will be inadmissibly delayed if the appropriate material and technical conditions are not created, especially at enterprises involved in processing and storing large volumes of foodstuffs. In 1986, at fruit and vegetable bases of Moscow, Leningrad, and a number of large industrial centers, mainly for this reason, there have been large above-normative amounts of idle time of cars filled with potatoes and other vegetables. The majority of enterprises of the meat and food industry have loading and unloading fronts for 1-2 cars. As a result, during the period of mass shipments, a large number of cars filled with meat-dairy and other products accumulate at the stations while waiting to be dispatched.

Significant amounts of idle time of the cars and losses of fruit and vegetable products are caused by the inadequate development of warehouse and refrigeration capacities. But the construction of warehouses is being carried out unsatisfactorily, and capital investments allotted for these purposes are not being assimilated year after year.

Many labor-intensive processes for loading and unloading railroad cars and trucks as well as operations within the warehouses continue to be performed manually. More than 70,000 people are employed in this kind of work. The winter of 1987 revealed large shortcomings in the equipment of enterprises with mechanisms for dispatching large cargoes. There is an especially critical shortage of pneumatic unloaders, conveyors, vibrators for clearing residuals of cargo from flat cars, and a number of other means of mechanization. Therefore their production is being arranged at repair and mechanics enterprises of the agroprom. A great deal of attention must be devoted to this measure.

The critical shortage of many machines and mechanisms has arisen not only by the fault of the manufacturers, but also because of a number of scientific institutions of the agroprom, which have not provided for their prompt development and delivery to production. Taking this into account, the USSR Gosagroprom has made the

newly created All-Union Design-Technological Institute of Transportation for the Agroindustrial Complex responsible for coordinating the activity of these scientific institutions.

In 1986 the republic agroproms carried out a complex of measures for technical reequipment and reconstruction of the material and technical base of the transportation shops.

As compared to 1985, the distance of rail sidings of enterprises of the system has increased by 12 percent, the number of steam engines—by 14 percent, and the number of railroad cars—by 30 percent. They have put into operation 12 car dumpers and heaters for defrosting cargo, and 5 installations for restoring the friability of freezing cargoes.

The level of mechanization of loading and unloading work on the committee's railroad sidings increased and now amounts to little more than 78 percent, which is extremely inadequate. For 1987-1990 the USSR Gosagroprom has envisioned additional measures for accelerating the development of industrial rail transportation. It is planned to put into operation 20 installations for defrosting cargoes, 25 unloading complexes with car dumpers, 100 drill looseners, 16 mixing installations, and 124 installations for bulk storage of cargo. In the future 45 locomotive depots and one steam engine repair plant will be constructed.

A closer contact is needed in the work with railroads today. There are still frequent cases in which the forces and means of the railroads are not used to provide for the unloading of cars that come to the general purpose areas addressed to the kolkhozes and sovkhozes, and by the fault of automotive transportation enterprises of the agroprom, large quantities of undispatched cargo accumulate at the stations. Sometimes agroprom organizations plan shipments of the same in opposite directions at the same time and other inefficient shipments, and the railroads are not prompt in sending cars to be loaded with products from the agroindustrial complex. In May of this year the USSR Gosagroprom and the USSR Ministry of Railways adopted a joint decree of their boards, which earmarked a complex of

measures directed toward strengthening business cooperation. It is intended to make mutual commitments for 1987-1990 between the stations and agroprom enterprises concerning the introduction of a comprehensive system for effective utilization of railroad cars on agroprom sidings and the general purpose areas of the railroads. Special attention was devoted to the extensive dissemination of the positive experience in joint work by the Gosagroproms of the Belorussian SSR and the Estonian SSR and the railroad administrations (divisions) for providing for complete and prompt dispatch of cargo from the agroindustrial complex and efficient utilization of rolling stock.

There will be very much to do in order to restructure the industrial rail transportation system of the USSR Gosagroprom, both organizationally and technologically. And this must be done in the shortest possible periods of time, since prompt shipments by rail transportation is a necessary condition for the stable operation of all branches of the country's agroindustrial complex.

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#### Belorussian Railroad's Restructuring Applied in Lithuania

18290040 Vilnius SOVETSKAYA LITVA in Russian  
20 Aug 87 p 2

[Interview with A. Rudzikas, chief of the Kaunas Signals and Communications Subdivision, by V. Skripov: "Both the Work and the People Benefit: The Belorussian Method in Lithuania's Railroad Enterprise"; first three paragraphs are editorial introduction; boxed material in fourth paragraph published in middle of interview]

[Text] Broad changes are under way today in the country's railroad enterprises: the sector is preparing for the shift to full cost accounting. An important step in this direction was made by Belorussian railroad workers, who suggested and introduced their own method of production intensification; the essence of this method, briefly stated, is expressed in the formula "more work with less people."

Our republic's railroad workers were one of the first to adopt their neighbors' experience. The necessary organizational and technical measures to introduce it were carried out in most railroad subunits last year.

A. Rudzikas, chief of the Kaunas Signals and Communications Subdivision, tells us how the restructuring of work related to introduction of the Belorussian experience is proceeding.

[Boxed item: ...The shift to cost accounting and new methods of management and wide-scale introduction of the collective contract and other progressive forms of organizing and providing incentive for labor will make it possible to increase the people's labor activity, to include resources that have not been utilized thus far, and to increase efficiency and thereby bring about higher rates of real growth with high product quality. (From materials of the June Plenum of the CPSU Central Committee)]

[Question] How are the tasks of the experiment being applied to your service, and what basic reserves have been found and utilized to cope with them?

[Answer] In our application, the formula means providing our subdivision with equipment and maintaining it so that we can guarantee the end result—uninterrupted service and traffic safety—with the smallest number of persons.

The preparatory stage was begun in the first quarter last year. At first it was necessary to calculate the number and type of workers we had to release in order to build up a wage fund, without reducing production volume, which would raise wages simultaneously for all those remaining in accordance with the new "prongs" of salaries and wage rates. Then we had to find the means to carry out this task.

The basic measures of the plan to provide for increased labor productivity were organizational and managerial in nature. A number of progressive engineering innovations provided for their practical implementation. Such as replacing overhead lines with cable over a large section of the track, equipping crossings with automatic devices, concentrating communications lines, and so forth, for example. Small sections and shops were eliminated. Laying additional cables in Kaunas, let us say, enabled us to close the telephone exchange in Yunava, releasing six telephone operators. Definite gain was obtained by consolidating brigades of electricians. Photographs of work time utilization made it possible to bring losses to light and publicize them. At the same time, specific study of reserves provided the opportunity to avoid indiscriminate wage leveling in distributing the additional workload.

As a result, we have been able to release roughly one-eighth of the work force.

[Question] Readers are interested in the "human" aspect of this process. How have persons reacted to such a "policy"? How were individual solutions received? How were those who were dismissed placed in jobs? In general, how does the administration see the social and psychological side of the problem?

[Answer] Frankly speaking, we have been concerned from the very beginning not so much about the technical and economic aspects, but about the social and psychological side of the problem. After all, with such a large reduction in the work force, the collective began putting the blame on themselves for the first time. No matter what is said, such reorganization initially involves tension and conflict: the usual ties are broken, someone is given preference, someone is given an unbiased evaluation, and so forth. We expected litigation and trials. In spite of our expectations, however, the reduction proceeded quite smoothly; it did not reach the point of official complaints, in any case.

From the first steps in the experiment, all workers in the subdivision were informed of its objectives and the consequences anticipated. At the same time, we tried to

establish an atmosphere in the collective in which persons would not feel a sense of professional inferiority when they are transferred to other work or dismissed. After all, an absolute majority of those who were dismissed are good, conscientious workers who have found worthy positions for themselves in other sections of the national economy, including in our department.

An eight-member commission—representatives of the administration and public organizations—has been directing the work their practical implementation. Such as replacing overhead lines with cable over a large section of the track, equipping crossings with automatic devices, concentrating communications lines, and so forth, for example. Small sections and shops were eliminated. Laying additional cables in Kaunas, let us say, enabled us to close the telephone exchange in Yunava, releasing six telephone operators. Definite gain was obtained by consolidating brigades of electricians. Photographs of work time in different production organizations in the city and the rayon. Some of the workers refused assistance and preferred to find a job themselves. They were given 2 weeks' pay. Considering the stereotyped attitude that has developed toward the "reduction in force" clause in their dismissal, we have been releasing such workers "at their own request."

[Question] Let us return to the economic aspect of the experiment. What is the national economic result of the steps taken? Surely increased remuneration is not an end in itself for the "Belorussian method?"

[Answer] The result has been quite good for our service. Taking 1985 as a basis for comparison, labor productivity in the first quarter of this year rose 24 percent over the corresponding period, and the average wage was increased by 24 percent. In absolute terms, the increase amounted to nearly 50 rubles on the average. At the same time, we not only ensured that the rate of increase in labor productivity exceeded the increase in wages, but we increased the volume of work as well.

[Question] The figures are quite good, whatever is said. Only the indicator of work volume is not fully clear here. You have been using a new unit of calculation for work volume since 1 January this year: instead of conventional technical units—values which reflect the labor-intensiveness of maintenance and repair, depending on the complexity of the equipment—you are now using the value of fixed capital. Let us assume that new equipment which is more reliable and more expensive than similar equipment has been received. It will have to be repaired less frequently, but the cost of volume will sharply increase. Won't there be a new indicator to provide incentive to the subdivision to obtain equipment that is less expensive?

[Answer] These doubts are not without foundation. Indeed, a new indicator is not devoid of contradictions. It is assumed that the price of equipment is appropriate

for its quality. Its reliability, complexity, and productivity. But there are all sorts of faults in the practice of price setting. As far as my opinion is concerned, it is obviously incorrect that new equipment involves less trouble, inasmuch as the time reduced in repair is lost in the additional efforts to become familiar with it, put it into operation, and so forth.

Well, in general, an indicator has not been worked out, really. But an experiment will be conducted on this. We will be looking closely at it and bringing out the shortcomings and contradictions.

[Question] You noted at the beginning of our conversation that basically organizational and managerial reserves were brought to the foreground in the first stage of the experiment. They have been exhausted today. But transportation development requires a continuous increase in capacities, increased volumes of work. How are you planning to do this?

[Answer] A fair question. Today we have to think about how to consolidate the level reached, when the organizational measures basically have been applied. Now the basic workload rests with the engineers and innovators. Progress requires that new factors be introduced.

Being aware of this, we are looking closely at a number of measures of this sort. Aside from those cited, I will mention ones such as replacement of semiautomatic block signaling with automatic block signaling, electrical centralization of the Alitus station, establishment of a base for centralized maintenance of removable units in Kaunas, and so forth. I think that these measures are insufficient, and that additional ideas are required from the specialists. We will be thinking and searching.

Our work is involved with provisions for traffic safety. And any strains or excesses in it are fraught with serious consequences. We do not have the right to forget this.

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#### Problems in Implementation of Odessa Railroad Experiment

18290028a Moscow *IZVESTIYA* in Russian 16 Aug 87 p 2

[Article by M. Gorbis and F. Chernetskiy, Odessa: "Emphasis on Gross Volume"]

[Text] Since January of last year, an experiment by Belorussian railroad workers has been introduced into operations on the Odessa Railroad. The essence of this experiment, as is known, consists of carrying out the same or an increased volume of work with a reduced number of personnel. One year ago, in the report entitled "Fewer People — More Work" (*IZVESTIYA*, No 162, 1966), we discussed the first steps taken in restructuring. At the time, the picture throughout the oblast was rather optimistic. Over a 6 month period, more than 5,000

workers had been released from their tasks comparatively easily and rapidly and, as a result, a noticeable improvement was realized in labor productivity. A considerable savings was realized in the wage fund and this subsequently made it possible to raise substantially the salaries and wage rates of those who had undertaken additional workloads.

The railroad finished up last year rather well on the whole: it over-fulfilled its freight turnover plan, labor productivity was raised by 11.4 percent compared to the previous year and more than 8 million rubles worth of above-plan profit was obtained. As you can see, the statistics were on the whole generally favorable. But we also noted a decline in the optimism previously displayed by the Odessa railroad workers. Our impression was confirmed upon becoming acquainted with a decree handed down during a May party meeting of administration communists. In particular, it contained the statement: "The changes in the operational style and methods are minimal and no qualitative changes have been carried out in the work of managing the railroad, services, departments or the party organization." This is especially disturbing in view of the fact that commencing 1 January next year the road will convert over to self-financing, that is, to complete cost accounting.

We held a discussion with administrative executives and we tried to explain exactly how we viewed this transition and the specific steps to be undertaken. Unfortunately, not only did we not receive any clear responses but in addition we did not succeed in clarifying the overall plan for this transition. Yes, it is believed that those with whom we spoke had no feeling for the future but only concerned themselves with current matters. And there are truly matters which require attention.

The financiers and planners do not preclude the possibility of a situation developing in the near future in which it will be impossible to pay wages in the absence of bank credits. What is the problem? Having introduced the Belorussian experiment, the Odessa road, within a year and a half, released approximately 8,000 workers. Since the beginning of this current year, the second principle of the Belorussian experiment — raising wages — has been carried out in an active manner. From a logical standpoint, it is necessary initially to reduce the staff, accumulate money and thereafter increase the wage rates and salaries.

Last year a savings of 5.5 million rubles was realized in the wage fund by means of a reduction in the number of workers. Taking this savings into account, a type of reserve, they began computing increases in the wage rates and salaries within the limits of the established amounts. Compared to 1985, for example, the year taken as a point of reference, when the average monthly wage was 192 rubles, it is now 40 rubles more.

And here the Odessa railroad workers encountered an unexpected development: the reserve wage fund that had been created, which they considered their own and upon which their hopes rested, disappeared. It was withdrawn completely by the ministry! Following a prolonged dispute, a portion of this reserve was returned to them. But as early as the second quarter, the amount returned was not enough even to cover the bonuses added on to the wages. It became necessary to turn to the bank for credit. Thus, an increase in the wages adversely affected the financial status of the road.

The Belorussian experiment remained unsettled

Why did the MPS [Ministry of Railroads] remove the portion of the wage fund that had been saved? The ministry referred to the fact that the railroad was not doing from an economic standpoint. The principal problem — the road was not coping with its plan for freight shipments, that is, it was not maintaining the chief operational indicator for railroad transport operations under the new managerial conditions.

We compared the freight shipment volumes during the first 6 months of last year, when the Belorussian experiment was in its initial stage of introduction, against the same period for this year. And it turned out that the freight shipment volume had declined by 4 percent. Truly, a clear contradiction was apparent: the work volume had declined despite a 20 percent increase in wages. Did this mean that the ministry had acted fairly a portion of the wage fund?

And other questions arose as well. What was to be done now? Should the newly increased wage rates and salaries be curtailed? Or should the number of workers be reduced? These are important and painful questions. And objective answers can be obtained for them only if one understands thoroughly the work program for both the immediate and distant future. But at the present time the railroad workers lack such a program.

Certainly, the most acceptable path is that of increasing the work volumes, transporting more freight, raising labor productivity and in this way achieving a balance in the proportions for the rate of growth in labor productivity and wages. But in response, we heard: "But where is the freight? There is no freight."

There is a paradoxical situation. Has there been a shortage of freight cars for some time? While the customers were searching for them, a shortage in freight suddenly developed. Last year, in connection with an absence of freight, the ministry requested the ministry to remove 115,000 cars from the plan. Only 18,000 were withdrawn. Local attempts were to be made aimed at filling the remaining cars with freight. But despite diligence in this regard, last year the road fell short in its freight shipment plan by more than 3 million tons. During the first 6 months of this year, it also fell behind by 300,000 tons of freight.

A rather complicated situation is developing on the road during this second half of the year. In accordance with a plan approved by the ministry, it must ship 300,000 more tons of freight than during the first 6 months and one and a half million more tons than actually were shipped during this period. Moreover, it must recover the ground lost since the beginning of the year in carrying out its shipment operations. But how can it extricate itself from this difficult situation, if during August its allied workers refused to ship more than 330,000 tons of their products, all of which were included in the quarterly plan?

In the final analysis, the end result would be as follows: the road would have to maintain 250 unnecessary workers. The over-expenditure of the wage fund would amount to more than 50,000 rubles and this naturally would bring about a reduction of one half percent in labor productivity, the railroad workers would be underpaid by approximately 300,000 rubles of income and withholdings for the material incentive fund would be decreased by 39 percent. And all of this would happen in just one month's time.

Here it is appropriate to analyze more thoroughly the principle of planning. How is a plan formed? Enterprises and organizations located in the service zone of the Odessa Railroad submit requests to their departments for the next year in which they point out how many cars they will need. Based upon these requests, summarized by the ministries and departments, USSR Gosplan and the MPS strive to satisfy the requests of the customers and establish limits for the road and for the consignees which are considered to be mandatory for both sides. The approach employed by the consignees — enterprises and organizations — with regard to their own requests, it can be stated directly, is a relatively easy one. They employ a simple computation: they order more cars and then just as suddenly, as mentioned earlier, they reduce the number needed. Later the cars are rejected with the same ease and carelessness as they were ordered.

For example, during the first 6 months of this year a wall materials plant rejected 316 cars, the Odessa Superphosphate Plant — 264 and the Odessapochvomash Association — 139 cars. IN all, the customers rejected 21,000 cars during the first 6 months. And this meant that the road lost more than 1 million tons of freight from its plan. And this happened under conditions in which many enterprises, after having rejected cars which they ordered, proceeded to fulfill and over-fulfill their tasks for the sale of products. Hence, it was clear that an excessive amount of rolling stock had been ordered!

"We still have not abandoned the method of planning based upon the "results achieved" stated M. Guryev, who recently, 6 months ago, was assigned to serve as the chief of administration for the Odessa Railroad, "we still have not forsaken the strong methods of administrative coercion. If we are discussing the new economic mechanism, then we encounter first of all the thought that the

very process of planning must proceed in the reverse order, moving upwards. At the bottom, the plan must be formed on a contractual basis: the railroad concludes contracts with customers and presents its plan to the ministry. A contract must be mandatory for both sides: the non-fulfillment of the conditions of the contract by any one of the partners will bring forth not just symbolic fines, as is the case at the present time, but complete reimbursement for the damage inflicted upon the economy. In this manner, the plan will be maintained on a realistic basis. The road will then be able to organize all of its economic activities on a complete cost accounting basis. Actually, the problem is discussed in this manner in the Law Governing a State Enterprise. And correctly so—our goal is to satisfy the requirements for transporting freight and not to work for the purpose of achieving dynamic growth in the notorious "gross volume." If no freight is available, then why do we reject results already achieved and release inflated plans from above? The manner in which this affects labor collectives is well known: non-fulfillment of the tasks for profit, stingy withholdings from profit for the various funds— incentive, socio-cultural-domestic, production development. Yes and on the whole the entire economic mechanism takes a turn for the worst.

Yes, the railroad is living through a complicated period. The optimism displayed one year ago is no longer being observed. The surface layer of reserves has been removed and today the deeper the layers the more complicated are the problems. The Belorussian experiment and its introduction serve as a type of general rehearsal for the forthcoming conversion over to self-financing and complete cost accounting. Over the course of several months, the road must be raised a level higher in the organization of its work. How will this be done? This is still not clear. Solutions are still being awaited for a number of problems. Their range is extremely broad, commencing with how best to raise the working efficiency of machinists and ending with the formation of new principles for planning the work of railroad transport.

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**Adaption of Belorussian Experiment to Bukhara**  
*18290021a Tashkent EKONOMIKA I ZHIZN in Russian No 8, Aug 87 pp 22-24*

[Article by Central Asian Railroad Bukhara Division Chief S. Turdikulov under the rubric "Strategy and Tactics of Restructuring": "With a Regard for Local Conditions—The Railroad Workers of Bukhara Begin to Incorporate the Belorussian Experience"]

*[Text] The essence of the experience of the Belorussian railroad workers can be briefly stated as such—a substantive change in the shipping process and the organization of production that will actually make it possible to free up thousands of people through a sharp rise in the efficiency*

*of operations and an acceleration of the growth rate of labor productivity, so as ultimately to introduce new tariff schedules (scales) through internal sources and without subsidies from the state.*

Last year this experience became the property of nine collectives of the railroads of the country, including the Central Asian. The Belorussian experience took root on the Central Asian Railroad. The organizational and technical measures carried out over the year made it possible to raise the growth rate of labor productivity, reduce the headcount, economize the wage fund and raise the pay schedules and scales. The projected end result was achieved: productivity increased by almost twelve percent, and costs were reduced by three percent.

In essence, the limits projected for 1990 have been reached in the second year of the five-year plan. How was this done? First of all thanks to the fact that the Central Asian railroad workers did not blindly copy the Belorussian experiment; they made material corrections in it and supplemented it with a regard for local conditions. S. Turdikulov, chief of the Bukhara Division of the Central Asian Railroad, relates how they approached this question.

Before setting about incorporating the Belorussian experiment, we carefully analyzed the state of operations and uncovered the causes restraining the intensification of shipping. Research showed that the chief barrier on the path of solving the problem was the low traffic capacity of the railroads. Freight delivery times were frequently disrupted due to this, and the labor productivity of locomotive crews declined.

We decided that a structural rebuilding of track facilities would help change the situation. It was also needed because the amount of capital repairs has increased substantially in the 12th Five-Year Plan. In reconstructing the rails, we replaced heavy ones with heat-resistant hardened ones that allow the engineers to reach maximum speeds on the track. At the same time, we had to "revive" and improve the upkeep of the operating mainlines. For this it was essential to ensure strict observance of standard time periods for repair frequency and to develop the track facilities rapidly. That is, the volume of work grew a great deal, and it was difficult to cope with it with the existing management structure.

And look at what picture had taken shape: up to now there had been no single master of the steel mainlines that would answer for their technical condition and the frequency and quality of repairs done. Their technical level thus did not always meet contemporary requirements, whence the poor traffic capacity and low train speeds. Take our Bukhara Division: we are engaged in the repair and upkeep of the Samarkand, Navoy, Ziadinsk and Bukhara line sections, track machinery station No 17 and the Bukhara line section protective-forest

stand. And what if they are reinforced, if the management system is restructured, the management apparatus is brought right to the enterprises and in that manner conditions are created for more independence in work?

We decided to combine all of these enterprises into a combined track-facilities enterprise (CTFE). It was converted to economic accountability [khozrashchet] and has a separate balance sheet and account with the State Bank.

Special provision was made to charge the CTFE with responsibility for the upkeep of track, right-of-way, artificial structures and other devices. It is obliged to track everything, to see that the track facilities are in the correct state to ensure the safe and uninterrupted passage of trains; to carry out all types of track repair; to keep track of its preservation and protection, protective stands of trees, the creation of snow-protection, guard, sand-protection, soil-reinforcement and other devices and the efficient utilization of track machinery and devices based on incorporating the latest achievements of science, technology and progressive experience. According to the calculations of specialists, the realization of this program will make it possible to raise the level of mechanization and intensification of track operations, to consume materials, fuels and electric power economically and to reduce the cost of operations.

The new enterprise has the right to conclude agreements not only with contractors and subcontractors, but also with clients, as well as to build using internal or in-house resources. This will reduce the time periods for the construction of facilities and raise the productivity of labor and the profitability of production, which will ultimately create the opportunity of improving the working and living conditions of the railroad workers.

In developing the management structure of the new enterprise, the specialists strove to simplify to the utmost the scheme for the mutual relations of its subdivisions—the line sections, protective-forest stands and machinery stations. They were all converted to a simple form of reporting. The aim that was prosecuted therein was this: leadership should be efficient, while the planning of track and building operations on the territory of the divisions should be well-defined. The territorial boundaries of the stretches served by the line sections were altered for this purpose with a regard for the staffing of personnel in the mass professions and the level of equipping with devices. The efficiency of the work was raised as a result.

The combined management apparatus of the track-facilities enterprises was created through a reduction in the number of management personnel on the line sections and at the machinery station. The Central Asian Administration and the Bukhara Division assisted in the selection and placement of the core personnel in the

departments and services of the new enterprise and developed special instruction cards that define the rights and obligations of the workers in the services.

Today the collectives of the line sections are engaged only in the upkeep of the steel mainlines, rights-of-way and other artificial structures. Eight track columns were delineated from these subdivisions. They were transferred to the jurisdiction of the machinery station, which also facilitated a rise in the efficiency of its operations. Having concentrated all heavy track machinery, devices, transport equipment and small-scale mechanization equipment in one set of hands, the Bukhara railroad workers improved the maneuverability of the equipment and the quality of work planning. Today the enlarged subdivision is engaged in all capital repairs, as well as routine repairs: rails, switches and switch ties are replaced.

The administration of the Central Asian Railroad, in conjunction with specialists from the combined track-facilities enterprise, have developed a plan of organizational and technical measures for 1986-1990 whose fulfillment will provide for a transition to industrial methods of mainline repairs. The fulfillment of the projected program will permit the collective, by the end of the 12th Five-Year Plan, to increase labor productivity by 120-125 percent and to bring the level of mechanization in track work up to 90 percent and in routine repairs to 70-80 percent.

As experience is showing, the calculations of the specialists were justified. The new structural subdivision was organized in the middle of last year. Over the first five months of operation in the new style, the collective of the enterprise had achieved such an acceleration that it were able to fulfill the yearly target for capital and routine repairs a month early. The centralization of management and the efficiency of planning have made it possible to increase the amount of capital operations by 12 percent in the fourth quarter compared to the same period of last year. The track repair plan was fulfilled by 131 percent. Profits beyond the plan totaled 10,500 rubles.

Positive results were also achieved because the Bukhara railroad workers armed themselves with the main principles of the Belorussian experiment: they tied their pay to the ultimate results of the labor and introduced a new system of material incentives. The economy in the wage fund that has taken shape today through reductions in headcount and combinations of professions remains at the disposal of the collectives themselves. They have been granted the right to make use of it to raise wage scales for all outstanding workers. We have made use of that right. The new approach has raised the vested interest of every member of the collective in high ultimate results, that is, in the timely fulfillment of customer orders. As a result, labor productivity has grown 107 percent. The earnings of the track-facilities workers have also increased.

The creation of a new structural subdivision has made it possible to look at a whole circle of problems in a new way. For example, they were able to raise sharply the efficiency of the realization of decisions being made. The opportunity has appeared for the fuller utilization of the experiment and skill of each specialist and the creation of conditions for the formation of economic thinking among the workers at all levels.

The structural re-alignment of track-facilities management that was begun in the Bukhara Division is already being carried out this year in all divisions of the Central Asian Railroad. The structure of signals and communications management in the Tashkent Division is being restructured and improved according to our model.

Today we have also armed ourselves with the experiment of the Dnieper and Southwest Railroads. This is yet another step on the path of expanding the operational independence of the labor collectives. We have obtained additional rights in the use of the production-development fund. Today these funds are not withdrawn and they can be accumulated. And this means that the opportunity arises of implementing major steps associated with the technical retooling and reconstruction of production and the elimination of bottlenecks. This will make it possible to resolve old and painful problems.

We have also begun to form the fund for social and cultural functions and housing construction in a new manner. Today it takes shape from the magnitude of the fund for the base year and an increase calculated according to a standard—a four-percent increase for every percentage point increase in labor productivity. There is the hope that with such an approach to the matter we will be able to make a real contribution in the near future to improving the social and living conditions of the division's workers. After all, we have received the right to execute everything implemented through the resources of the fund for the development of production, social and cultural functions and housing construction, as well as through bank credit, by either contract or in-house means.

The rights of labor collectives to make use of the wage fund have also been expanded. Today, upon coordination with the trade-union committee, additional payments within the range of 12-24 percent of the wage scale can be made through the use of economies in this fund to workers that distinguish themselves with great professional skill and are employed in especially responsible operations. Additional payments are also envisaged for combining professions. Moreover, the list of these professions no longer need be approved by higher-up organizations. Highly skilled professional and technical workers and employees can receive supplements on the scale of 50 percent of the base pay rate. The maximum level of the salary for workers employed in especially important and responsible sectors has reached 250 rubles a month.

The size of the additional payments, supplements and salaries in every instance is determined depending on the personal contribution of each worker to raising the efficiency of production. They can be reduced or abolished altogether if the indicators of labor activity worsen.

An important link in the system of reinforcing the management mechanism is improving the principles of material incentives for labor collectives. The procedure for the formation of incentive funds that prevailed earlier has been simplified. Three fund-forming indicators have been established for the railroad division: cost of shipping, labor productivity and freight dispatches. And they can vary for each sub-departmental enterprise with a regard for the specific nature of its activity. The flexibility of the material-incentives system has increased as a result, and it has come to depend more on the real contribution of the individual to the end result.

The set of measures to improve the management mechanism that is being incorporated in the Bukhara Division of the railroad has made it possible to make use of such significant reserves for acceleration and intensification as initiative, a businesslike nature and enterprise.

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#### Distant Railroad Routes

18290025a Moscow GUDOK in Russian 4 Sep 87 p 1

[Brief by D. Sverkunov, Minsk: "Very Long Distance Routes"]

[Text] More and more stations of the Belorussian railroad are developing long distance and very long routes. For example, potatoes travel a route of 550 kilometers, and automobiles and tractors — of 2,000-3,000 kilometers.

Calendar planning of routes with the help of computer technology has been started by the railroad. This was introduced first at Pridvinskaya Station.

8228

#### Problem in Belorussian Railway System

18290025b Moscow GUDOK in Russian 19 Sep 87 p 1

[Brief by I. Rusyayev, Brest: "No Concern for the Goods"]

[Text] There is no doubt that the Belorussian method is a good one in many respects. But even here errors are sometimes tolerated. Here, for example, at our Brest division the number of attendants for passages has been curtailed and the Brest-Vlodava line has been done away with. Considerable capital has been saved by doing this.

But there were losses too. The losses result from the fact that good structures were not preserved — booths at the 5 and 7 kilometer crossings.

I understood that the railroad does not value state property at all. Yet the booths could have been dismantled. I made this proposal to the senior engineer of the railroad division, A. Kalishuk. "Yes," he agreed, "we should have dismantled them." That was on 15 June of last year. But the booths have not yet been dismantled. Everything that could have been removed from them has been, including the complex electrical signal housing.

8228

**More Effective Transportation Operations**  
18290025c Minsk SELSKAYA GAZETA in Russian  
1 Aug 87 p 3

[Brief, BELTA [Belorussian News Agency]: "More Effective Work for Transportation"]

[Text] Belorussian railroad workers were the first within the branch to make the transition to complete cost accounting and self-financing. Since the beginning of the year about 5 million rubles of profits have been generated above the plan, hundreds of thousands of tons of national economic goods have been shipped and the index on labor productivity has been significantly overfulfilled.

Nevertheless, under the new conditions the reserves for increasing the effectiveness of work are not yet being fully utilized. Not all subdivisions by far are profitable, the uninterrupted and safe movement of trains is not being achieved at the necessary level and cases of violations of labor and technological discipline have been observed.

It is necessary to more fully satisfy the country's shipment needs, to fulfill contractual obligations for the entire goods nomenclature on schedule, to improve the quality of services to passengers, to prepare for winter in the required way and to achieve the preservation and saving of capital.

This was the topic under discussion at a grand meeting in honor of the Day of the Railroader, which took place in Minsk. A. G. Andreyev, director of the Belorussian Railroad, presented a speech. S. I. Solovyev, USSR Deputy Transportation Minister, awarded the collectives of the Belorussian railroad and its Minsk division the transition red banners of the ministry and the central committee of the branch trade union central committee for the work results of the second quarter.

Participating in the meeting was L. S. Firisanov, Deputy Chairman of the BSSR Council of Ministers.

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### Costs of Self-Financing in Transportation Examined

18290019a Moscow GUDOK in Russian 27 Oct 87 p 2

[Article by O. Serebryakov, deputy chief of railroad, candidate of technical sciences, N. Ivanitskiy, candidate of technical sciences (Rostov-on-Don), V. Dmitriev, professor at MIIT, and V. Kligman, senior scientific associate (Moscow): "Self-Financing at Another's Expense"; first two paragraphs *Gudok* introduction]

[Text] The discussion started in *Gudok* concerning the forthcoming changes in the structure of branch management and its changeover to complete cost accounting and self-financing has elicited a lively response from the readers. Of special interest here is the problem of reorganizing industrial rail transportation—PPZhT. As the readers note, Promzheldortrans, which was created for serving customers who do not have their own sidings or reloading capacities, sometimes acts not at all in the interests of the consumers. Frequently it provides services only for clients who are advantageous, who have their own transportation shops and mechanized loading and unloading.

How can the management structure of Promzheldortrans be improved? Or is it perhaps necessary to change the economic conditions for the activity of the PPZhT? This is what specialists are discussing today.

### Why Support the Parasites

The first thing that catches one's eye is the cumbersome structure for management of rail transportation that has been inherited from the past. Created more than 20 years ago and initially under the jurisdiction of the Ministry of Automotive Transportation and then the Ministry of Railways, this subdivision came like an "alien department" under the wing of the railroad workers, and so it remains to this day. Incidentally, judge for yourselves.

Take, for example, the PPZhT, which operates on our North Caucasian Railroad. During the past 5 years they have paid the railroad more than 3 million rubles in fines for unsatisfactory utilization of railroad cars. One might say that this is the extent of our "cooperation." Statistics show that during the past few years, under various pretexts and with the energetic

support of their main administration, certain industrial transportation enterprises have increased the norms for idle time of railroad cars. And, after all, the norm is very high to begin with, exceeding the average amount of idle time of railroad cars on sidings of industrial enterprises by a factor of 1.7.

The PPZhT is losing large loading resources as a result of poor utilization of the cars. An analysis of cars that have been rented and those that are their own in the Northern Caucasus showed an unpleasant picture. If they were to

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stick to the norm, the more than 5,000 of these cars could fully satisfy all the region's needs without exception for the shipment of, say, construction cargoes.

But this is not the case in reality. The utilization of rolling stock by the PPZhT for construction cargoes is worse by a factor of 4.1 than it is with mainline transportation. This makes it necessary to take more than 1,100 cars out of the working fleet each day. Losses in loading each year for this reason alone in the Northern Caucasus amount to no less than 2 million tons.

Such is the price of departmental separation as revealed by only one example. The organization of maneuvering work through the forces and funds of the PPZhT itself looks even more wasteful. Thus at the Rostov center all the maneuvers at cargo stations are carried out by 14 steam engines. And they are used only for placing the cars along the cargo fronts, and their overall productivity is less than at the stations by a factor of 10.

We can anticipate the objections about this kind of aggravation of the problem. They will say that there should be a unified technology of work from mainline and industrial transportation. And there should be. And such technology actually does exist on paper. But this is the purest kind of formalism. In fact, during all the time Promzheldortrans has been in existence not a step has been taken toward mastering the advanced organization of production that has been achieved in mainline transportation. The performance of double or triple operations, which have become the norm for the PPZhT is an unattainable ideal.

Thus the PPZhT is in a class by itself. The roads can in no way affect the negligence and inefficiency of their partners since they are not allowed to take their cars onto the roads of others.

One asks whether the Ministry of Railways should continue to maintain in its system separate industrial transportation with its "in-kind economy." It would seem that this is a waste of government funds. The PPZhT's should merge with the railroads. Then both parties would have a single common goal: to provide for complete and continuous transportation of cargo with a high level of utilization of technical means.

It would be expedient to combine the PPZhT's with mechanized divisions for loading and unloading work. After all, today the output of the mechanized sections is greater than in industrial transportation by a factor of 2.4. It would also be more advantageous to repair their own and rented cars in a common

flowline. In their new capacity the mechanized divisions would have the opportunity to plan the loading of mass cargoes on the free fronts more efficiently and to receive the cars onto the sidings on demand.

The reorganization would also open up broad possibilities of cooperative utilization of loading and unloading mechanisms and cars. On the North Caucasian Railroad alone this would make it possible each day to release 300-500 cars which are in short supply for coal and other cargoes.

Reserves, as they say, are lying at our feet, but independently, without the support of the railroads. The PPZhT's have not been able to expand the sphere of their activity for many years. Just as 5 years ago, they carry out only 4 percent of the overall volume of shipments, serving 5,500 industrial enterprises, organizations, and construction projects. Throughout the entire 11th Five-Year Plan, the processing of cargo by this subbranch increased by only 1.7 percent annually. This is less than the rates of increase in industrial output in the region and less than the demand of the consumers. An throughout the network as a whole it turns out that the mechanized divisions, for example, process 2.4 times more cargo than all of Glavpromzheldortrans.

And so practice convinces us that to farm out to the PPZhT's the less active transportation shops of enterprises and organizations is both disadvantageous and inexpedient. Service for all the transportation clients should be the responsibility of the railroads themselves, which will do this with a much smaller amount of expenditures and with better quality. If we do not do this, we shall continue in the future to separate the technology of loading and unloading from the transshipment process.

And so we think that the PPZhT's should be merged with the railroads. And organizationally as well, apparently, it would be easiest to transfer the capital to the mechanized divisions. Of course, the effectiveness of such a decision may seem questionable, but it is simply impossible to tolerate the parasitism of Promzheldortrans on the railroads any longer.

### Without Firm Economic Soil

The work of interbranch industrial transportation is more and more frequently being discussed pointedly on the pages of the press. And, unfortunately, much more frequently the discussion is about shortcomings. Certain articles even raise doubts about the expediency of the very existence of the PPZhT's. But what is this all about? Why does it seem that this advanced form of production organization, which is called upon to economize on labor, material, and fuel-energy resources, causes so many complaints?

Apparently the problem is that a progressive idea, in and of itself, cannot exist without firm economic soil. But what is this soil today?

Glavpromzheldortrans, as a cost accounting main board, is not yet taking advantage of its "monolithic" position with respect to the

enterprises it serves. The PPZhT's are establishing essentially unequal relations with them. This is why the PPZhT's are more willing to accept for service enterprises whose railroad business is already arranged. And those that do not have a railroad business are not advantageous.<sup>e</sup> That is, there is incentive for the easier work. And the more difficult work is frequently rejected. The quality of service is not evaluated in any way.

This is the kind of one-sided economic mechanism that reigns in Promzheldortrans. Therefore it is not without reason that the idea has become established that the PPZhT's are parasites that make their indicators at the expense of the leading enterprises.

The main reason for this situation is that it is brought about by the existing rates for payment for the work of the PPZhT's. They are the ones that are not contributing to the regime of economy. And this takes place because the rates are individual for each PPZhT and are formed on the basis of the individual production cost. As a result, even enterprises that are operating poorly can make a profit. For the individual production cost legitimizes shortcomings in the work along with the necessary expenditures. It is as though it is justified to maintain a surplus fleet of locomotives, a low level of mechanization in loading and unloading work, excessive expenditure of fuel, and—the main thing—low labor productivity.

This means that the main way to "raise up" the PPZhT's is to change the rates for them and make them real incentives. Our department at the MIIT has developed and suggested such a system of rates for shipping cargoes by PPZhT's. It envisions group rates for railroad enterprises that are operating under approximately the same conditions. The base for these will be the cost of the transportation, depending on the volumes of the shipments and their distance.

We think that only this kind of arrangement will provide for normal cost accounting conditions for the activity of the PPZhT's and will motivate them to reduce the cost of shipments.

As concerns the rates for loading and unloading work, we think that they should be no higher than the fees for analogous work by mainline rail transportation. Then the competition with mainline transportation will force them, as they say, to look for clients.

To be sure, for a certain amount of time beneficial rates should perhaps be left in effect for enterprises with a high level of mechanization. And it will also be possible to exert pressure on those PPZhT's themselves cannot or will not strengthen their railroad business. It is necessary to grant Glavpromzheldortrans the right to make special payments, having made it the client of the customer for the unified technical policy in its subbranch.

It will undoubtedly be necessary to strengthen the material base of the PPZhT's and be concerned about their profitability. But if this is not achieved, one should not be afraid of abolishing

them in keeping with the Law on the State Enterprise. In order to avoid this, it is necessary to seek and try, possibly, change the PPZhT's over to the collective contract, and so forth.

The last thing which one must not fail to mention are the interrelations between Promzheldortrans and the clients. When determining the volume of products sold by the PPZhT's in today's money it is necessary to take into account not only the revenues from work performed, but also that which is lost because of work not done. It is also necessary to evaluate in terms of the ruble the effect or harm caused by reducing or increasing the amount of idle time of the cars.

Then, it would seem, the PPZhT's would have a desire to satisfy the needs of the enterprises for transportation and loading and unloading work as completely and well as possible. And the PPZhT's will strive to accept for service any enterprise located in the sphere of its operation. In any case, the principle of economic interest should be fully observed.

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